



# **Zebra<sup>®</sup> TTP 7030<sup>™</sup>**

## **Kiosk Receipt Printer**

# **Technical Manual**



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**FCC Radiation Exposure Statement (for printers with radios or RFID encoders)** This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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**Notes •** \_\_\_\_\_

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# Introduction

## About This Manual

This manual contains the information required to install the TTP7030 printer and to run it from a host computer such as a PC.

*Programming on page 27* gives the applicable control codes and escape sequences supported by the printer processor firmware.

Other chapters of the manual contain information about the printer error codes, communications-parameters, test print functions, specifications, replacement parts, etc.

## Updating

This manual will be updated as, from time to time, printer functions and features may be added or amended. You will always find the latest edition on our web site (<http://www.zebra.com>).

If you require functions not found in this manual edition, please contact Technical Support for your region or the Zebra partner the printer was purchased from.

## Contacts

Technical Support via the Internet is available 24 hours per day, 365 days per year.

**Web Site:** [www.zebra.com](http://www.zebra.com)

**E-mail Back Technical Library:**

E-mail address: [emb@zebra.com](mailto:emb@zebra.com)

Subject line: Emaillist

**Self Service Knowledge Base:** [www.zebra.com/knowledgebase](http://www.zebra.com/knowledgebase)

**Online Case Registration:** [www.zebra.com/techrequest](http://www.zebra.com/techrequest)

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<b>Customer Service Department (US)</b> <b>Internal Sales Department (UK)</b> For printers, parts, media, and ribbon, please call your distributor or contact us.	T: +1 877 ASK ZEBRA (275 9327) E: <a href="mailto:clientcare@zebra.com">clientcare@zebra.com</a>	T: +44 (0) 1628 556032 F: +44 (0) 1628 556001 E: <a href="mailto:cseurope@zebra.com">cseurope@zebra.com</a>	T: +65 6858 0722 F: +65 6885 0836 E: China: <a href="mailto:order-csr@zebra.com">order-csr@zebra.com</a> <i>All other areas:</i> <a href="mailto:csasiapacific@zebra.com">csasiapacific@zebra.com</a>
<b>Key:</b>	T: Telephone F: Facsimile E: E-mail		



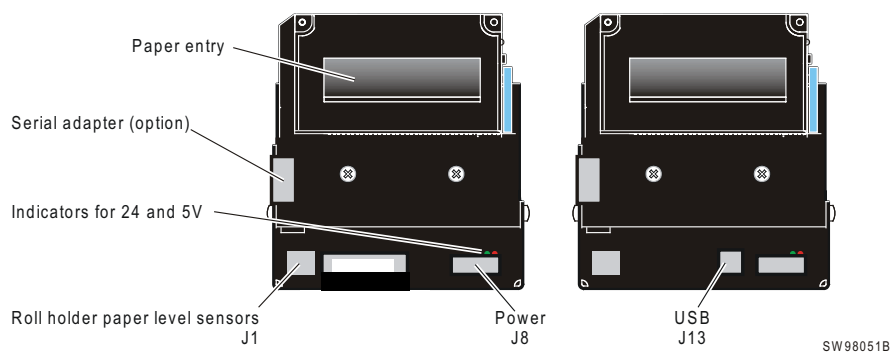


## Product Presentation

The TTP 7030 kiosk printer uses direct thermal printing. The print speed is up to 75 mm per second.

The printer has an integrated control board. The TTP 7030 communicates with the host computer through the USB interface and can be equipped with an optional serial port.

**Figure 1 • Printer Exterior, Rear View**

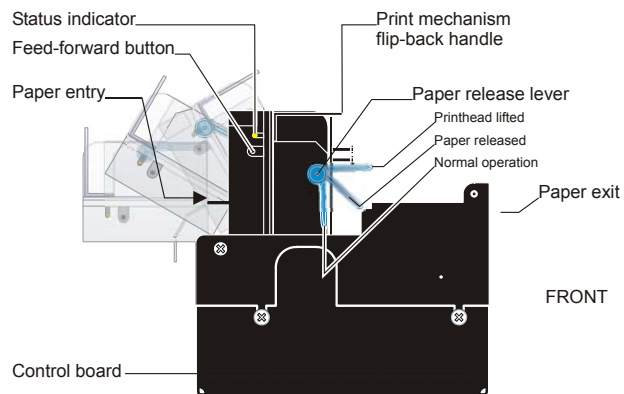


Printer drivers for Microsoft Windows™ are available, and the printer is compatible with the Plug and Play standard. It is also possible to address the printer directly from the kiosk software without using drivers.

The loop generating presenter mechanism handles documents of various lengths. It holds the printout until printed, then cuts and presents the complete printout to the customer. The retract-and-retain version of the printer can retract uncollected printouts into a wastebasket inside the kiosk.

A flip-up print module gives the operator access to the paper path, and print head, for maintenance purposes.

Figure 2 • Printer Exterior, Side View




SW98049

# Indicators

## Status Indicator

The status indicator (see [Figure 1, Printer Exterior, Rear View , on page 9](#)) has several functions:

<b>ON constantly</b>	Indicates that the printer is operational.
<b>Flashes, pauses, flashes</b>	<p>Indicates warnings of non-severe error. The number of flashes reflects the <i>warning-code</i>:</p> <ul style="list-style-type: none"> <li>2 flashes: Paper low</li> </ul> <p> <b>Note</b> • This signaling is disabled by default. It can be disabled/enabled by setting parameter P52.</p> <ul style="list-style-type: none"> <li>3 flashes: Weekend low</li> </ul> <p>Warning-codes are reset automatically when the condition causing them are removed.</p>
<b>Flashes rapidly</b>	<p>Indicates severe error. Hold down the Feed button and the number of flashes will reflect the <i>error-code</i>.</p> <ul style="list-style-type: none"> <li>1 — Presenter jam, paper cannot be ejected / retracted</li> <li>2 — Cutter cannot return to home position</li> <li>3 — Out of paper</li> <li>4 — Printhead lifted</li> <li>5 — Paper wrapped around platen (under head)</li> <li>6 — Temp error &gt;60°C</li> <li>7 — Presenter jam, motor cannot rotate</li> <li>Fast flashes — Checksum error, firmware</li> <li>Steady light — Wrong firmware type</li> </ul>

Error-codes are reset:

- When the conditions causing them are removed.
- When the printer is turned off/on.
- When the **blue** printhead release arm is lifted and then lowered.

## Control Board Indicators

The control board has two power indicators behind the power connector:

- Green indicator constantly ON: 24 V present
- Red indicator constantly ON: 5 V OK (generated on control board)

## Feed Button

The Feed button will feed, cut, and present a complete page.

Any data in the print buffer will be printed. If the buffer is empty the page will be blank.

In black mark mode, the page will be synchronized with the black mark.

Press and hold the Feed button while turning on the power, or while opening and closing the printhead to print a self-test printout. See [Making a test printout on page 14](#).

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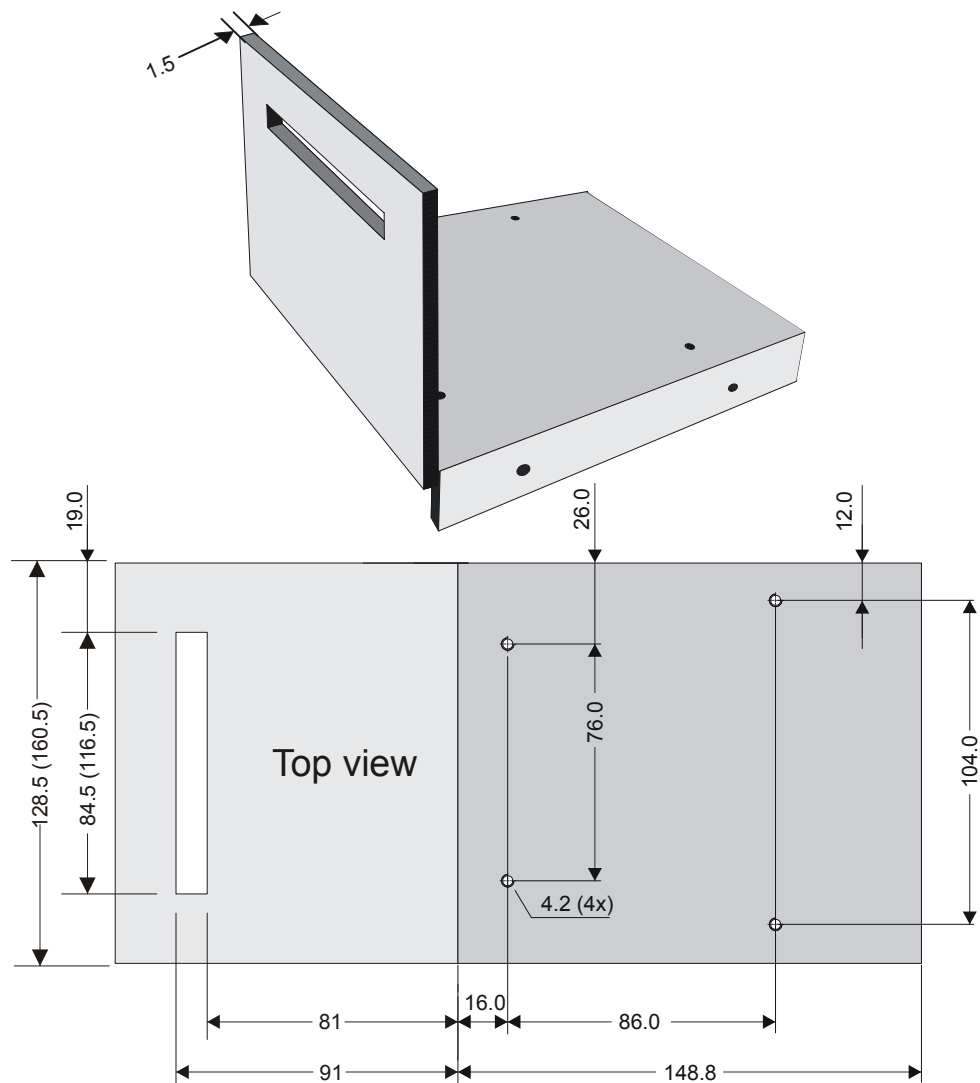
## Installation



## Installation Considerations

The TTP 7030 printer is designed to be installed in an enclosure such as a self-service kiosk. The illustration below gives an example of a printer-mounting shelf. See also [Printer dimensions on page 110](#). 3D solid models and outline drawings for CAD are available in the partner section of [www.zebra.com](http://www.zebra.com).

**Figure 3 • Example of a Simple Shelf for Fastening a Standard Printer**



All measurements are in mm. Measurements in parentheses are for TTP 70x0/112. SW98056

Additional space is required for paper loading and paper jam removal. Consider mounting the printer on a movable platform so that the printer can be maintained outside the kiosk enclosure.

## Electrostatic Discharges, and Earth Currents

Preventing ESD and earth currents from affecting the printer operation requires proper connection of the printer chassis to protective earth through a mounting platform or through a separate earth conductor.

## Ambient Light

There is an optical sensor just inside the paper exit at the front of the printer.

To ensure proper printer operation, design the printer enclosure so that it prevents direct sunlight or light from indoor lamps from reaching the sensor through the paper exit.

## Connecting To The Computer



**Caution** • Using a non-Zebra power supply may cause excessive EMC interferences and void the EMC certifications of the printer.

### Connect the TTP 7030

1. Connect J13 of the printer to the USB port of the computer or the USB hub to be used. USB connectors can be recognized by the following symbol:

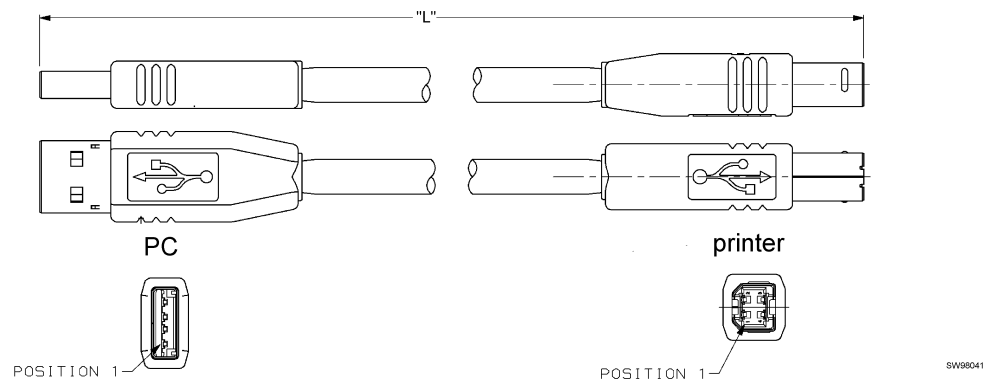


**Note** • Connector J13 is a 4-pin USB type B connector. See [USB, TTP 7030 on page 877](#) for pin assignment.



**Note** • A suitable cable is available from Zebra, see [Ordering numbers on page 115](#) for ordering number.

**Figure 4 • USB Cable with Type A and Type B Connectors**



### Using a Serial Adapter

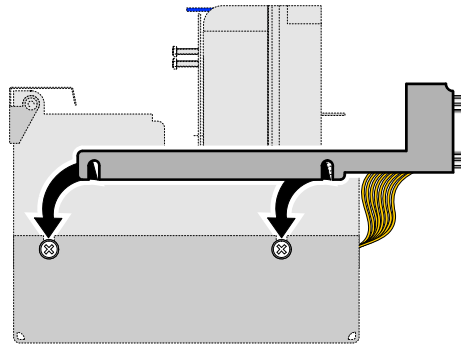
1. Loosen the control board module; see [Removal on page 110](#).
2. Connect the serial adapter to J4 on the control board.
3. Fasten the control board module; see [Removal on page 110](#).
4. Fasten the serial adapter with the two screws on the right hand side of the printer.
5. Connect a Zebra serial cable, ordering No.10825-000, between the printer and the computer to be used.



**Important** • We strongly recommend using the Zebra cable because many incompatible cables are available.



**Figure 5 • Fitting a serial adapter to the printer.**



## Connecting the Power

Using the Zebra power supply (see *Ordering Numbers* on page 127 for ordering number):

1. Make sure the line voltage selector on the power supply is set to your local line voltage (only PSU 01035-014).
2. Connect the cable from the power supply to J8.
3. Connect the power cable to the line outlet.
4. Apply power to the printer.

If you use another type of power supply unit, connect the voltages as shown in Figure 6.



**Important** • The protective ground and the 24V ground must be separated in the power supply to avoid ground loops!

At the printer end of the cable, use an Tyco Mate-N-Lok connector housing and two contact-sockets:

Figure 6 • Power Connection

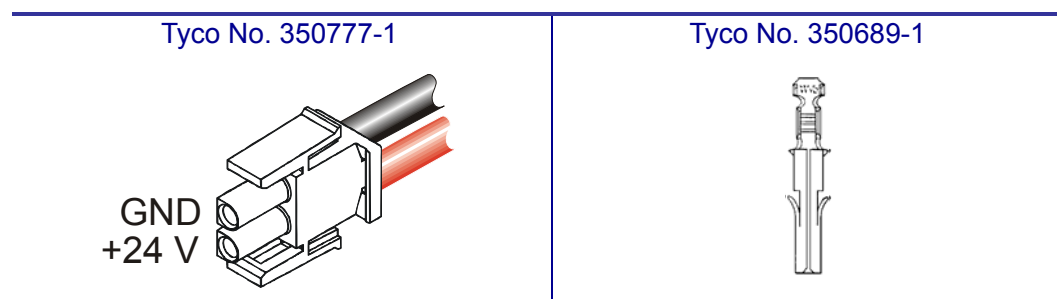



Table 1 • Current Consumption

Idle	150 mA	150 mA
Standard text printing	2.5 A average	3.5 A average
All black printing	8.5 A	11 A

## Making A Test Printout

- Is a power button available for the printer?

If...	Then...
Yes	<ol style="list-style-type: none"> <li>Remove power from the printer.</li> <li>Hold the feed-forward button depressed while powering ON the printer.</li> <li>Keep the button depressed until printing starts. This produces a printout showing the firmware program version and date, control board revision number and serial number, name of loaded fonts and logotypes, and the parameter settings.</li> <li>Each successive press of the button will produce a test printout.</li> <li>Switch the printer OFF and ON again to exit self-test mode.</li> </ol>
No	<ol style="list-style-type: none"> <li>Lift the printhead.</li> <li>Press and hold the Feed button while lowering the printhead, and keep it pressed until after the auto-load is completed.</li> <li>Release the button. A self-test printout will be printed.</li> </ol> <div>  <b>Note</b> • this feature was introduced in firmware version 2.44b.         </div>

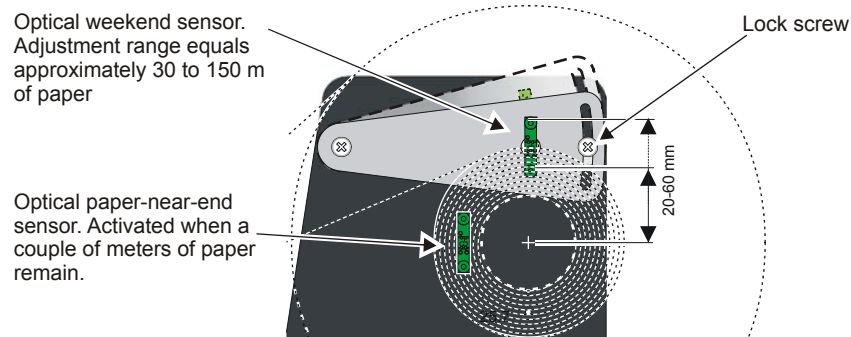
## Installing A Printer Driver

Printer drivers for most versions of Microsoft Windows™, are available on the Zebra web site <http://www.zebra.com>. See *Part Number List on page 115* for the part number. Please follow the installation instructions that accompany the drivers and refer to the Kiosk Driver Reference Guide, Part Number P1006873-001, available on [www.zebra.com](http://www.zebra.com) for detailed driver information.

## Paper Level Sensors

The printer has inputs for one paper-near-end sensor, and one weekend sensor.

**Figure 7 • Paper Level Sensor Indicators on Roll Holder**



The paper-near-end sensor alerts the system when a couple of meters of paper remain on the roll. The purpose of this sensor is to get an early alert so that you can replace the paper roll in time in remotely located kiosks.

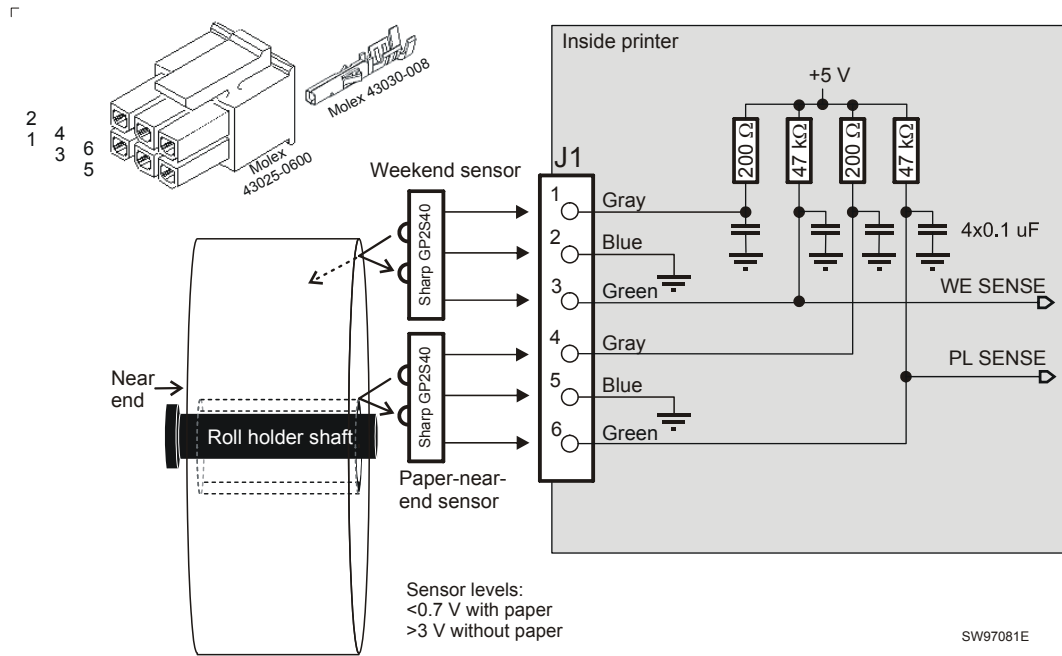
The weekend sensor should alert when the remaining paper does not last over a weekend. A reason to use this sensor is that it is more expensive to get a service technician out on a weekend or holiday than it is to replace the roll before it is totally empty.

The Zebra 150 mm paper roll holders are equipped with paper-near-end sensor only, while the 250 mm roll holders have both paper-near-end and weekend sensors.

When installing the Zebra roll holder just connect the cable from the roll holder to connector J1 at the back of the printer. See [Figure 1, Printer Exterior, Rear View](#), on page 9.

If you use custom designed roll holders, connect the sensors according to [Figure 8, Paper-near-end Sensor Connection](#), on page 22.

Figure 8 • Paper-near-end Sensor Connection



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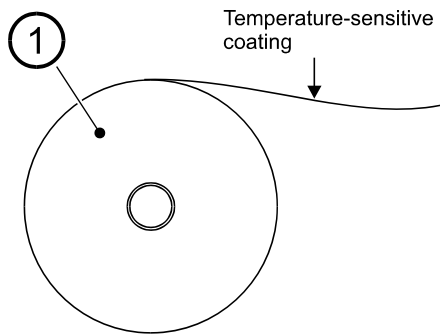
# Operation



## Installing a Paper Roll

1. Turn the new paper roll as shown. The paper should be inserted into the printer with the temperature-sensitive side up.

**Figure 9 • Paper Roll Orientation**



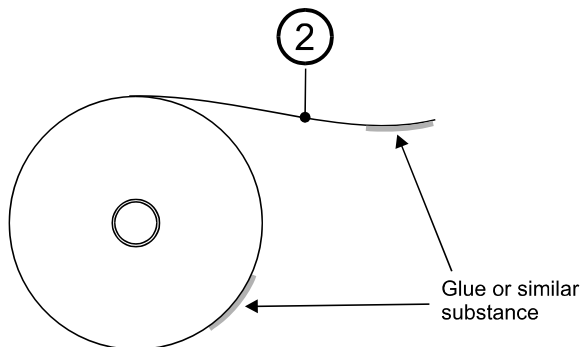
SW96074A

2. Tear off a full turn of the paper (approximately 0.5 m) from the new paper roll.



**Caution •** This is important since the outer end of the paper is usually fixed to the roll with some type of glue or self-adhesive substance that might otherwise cause paper jam or even print head damage.

**Figure 10 • Tear off 0.5 m from the new paper roll**



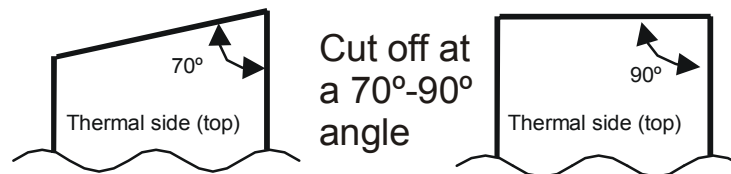
SW96075A

3. Make sure the printer is turned ON.



4. Cut the paper in a suitable angle. See [Figure 11](#).

**Figure 11 • Suitable paper edge for auto load**



**Note •** The paper sensor is on the same side as the blue paper release lever (where the arrow points in [Figure 12, Insert the New Paper](#), on page 25). If the paper is cut in a direction opposite to that as shown in the figure above, the sensor will not detect the paper.

5. Insert the paper through the paper entry opening at the back of the printer.  
The printer will now feed, cut and eject a printout, and then automatically go on-line.



**Note •** In high temperature and high humidity, the paper may lose its stiffness resulting in paper jam at automatic paper loading. In such cases, load paper manually.

**Figure 12 • Insert the New Paper**

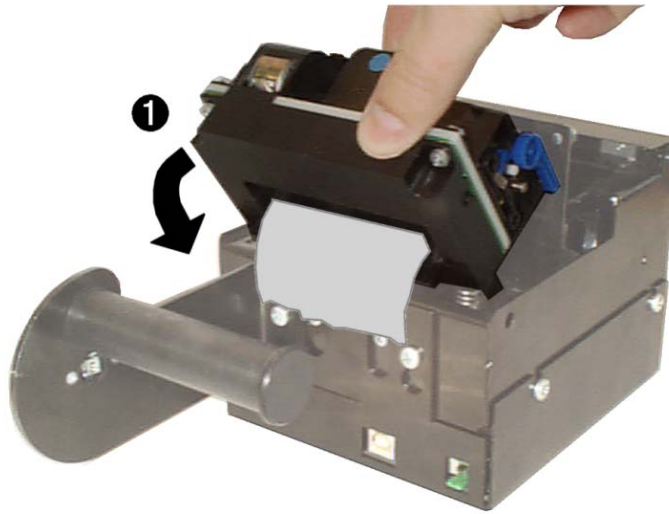


## Clearing Paper Jams

Should a paper jam occur, follow the procedure below:

1. Tear off the paper close to the paper roll and open the print module.

Figure 13 • Open the Print Module



SW98064

2. Lift the print head by pushing the paper release lever upwards.
3. Remove all jammed paper by gently pulling the paper up and out of the print module. Make sure the paper path is clear and then close the printhead.

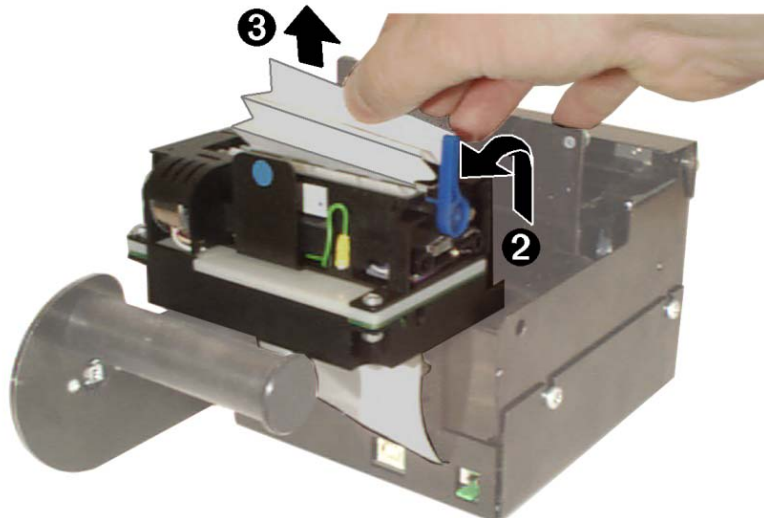


---

**Caution •** NEVER pull paper backwards through the print mechanism.

---

Figure 14 • Remove All Jammed Paper



SW98065



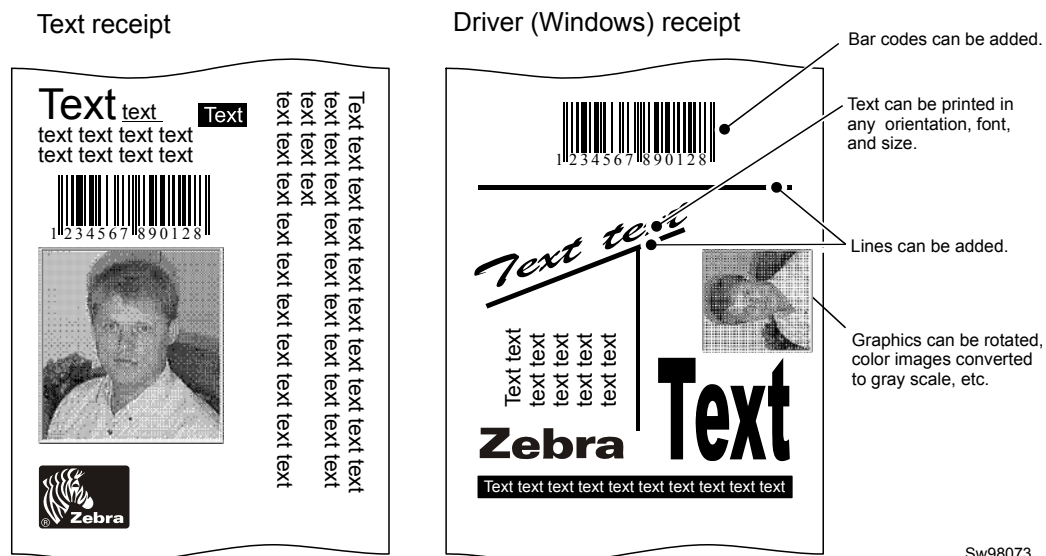
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# Programming

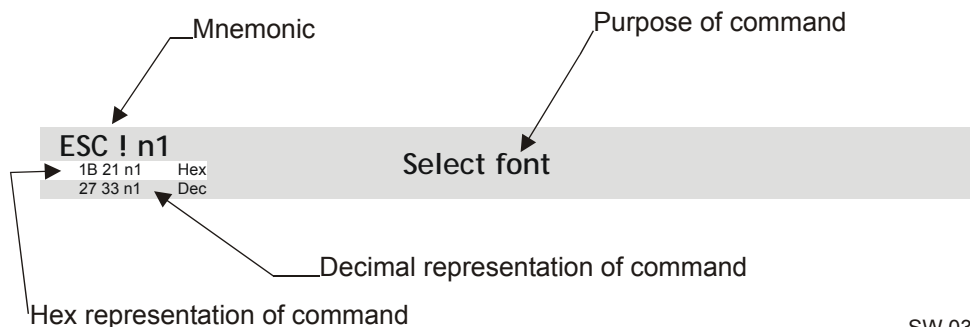
There are two completely different ways of setting up the printout: Text oriented and driver oriented style.

Command Code	<p>The printout can be seen as the page of a simple word processor. You send text and graphics to the printer, which prints the information in the same sequence as the data is received. Design features are limited to the font stored in the flash PROM of the printer.</p> <p>It is possible to select a fixed page length. If you do that, text and logotypes can also be printed in landscape orientation.</p> <p>There are two text cursors, one for portrait, and one for landscape. The start positions of the cursors are the upper left corner for the portrait cursor, and the upper left corner for the landscape cursor, see <a href="#">Ticket Styles on page 28</a>. You can switch between these cursors at any time; the cursor will retain its last position on the ticket.</p>
Driver oriented	<p>All TTP 70x0 printers can print documents through a driver. When a Windows driver is used, you can use any Windows program to design the ticket with text, graphics, bar codes or whatever you want to print and in any orientation you want.</p> <p>The Windows driver issues all the necessary commands. By setting up printing preferences in the driver you select how the printer should cut and present the printout.</p>

### Figure 15 • Ticket Styles



## How The Commands Are Described



SW 03002

### Mnemonic

Is the popular command name that should be easy to remember.

### Hex

Give the command in hex representation

### Decimal

Give the command in decimal representation

### Values

n1, n2, etc. represents values that you set with the commands. What you should enter here depends on what you want the command to do.

### Examples

Command examples are formatted in **Courier** and typed in the same way as used in the Zebra TTP editor:

```
<ESC>&P<1><19>
```

Where <ESC> means the escape character 27 decimal (hex 1B). Numbers between less-than and greater-than characters, for example <15>, means 15 decimal (hex F). When the numbers indicate a hex value, h is appended to the number.



**Example** • <65>, <h 41> and A are three different ways of expressing the character A.

## Two-Byte Character Definitions

Some commands and parameters are used with a two-byte value definition because the internal structure of the printer's firmware limits access to values greater than 255. To represent values greater than 255 in this two-byte format, divide the value by 256. The whole number (quotient) is the value of the leading byte and the remainder (modulo) is the value of the trailing byte.



**Example •** To represent 731 in two-byte notation, divide 731 by 256.

$$731 \div 256 = 2 \text{ with a remainder of } 219 \quad (2 \times 256 + 219 = 731)$$

Therefore, the two-byte representation of 731 is <2><219>.

## Summary Of Control Codes & Escape Sequences

**Table 2 • Control Codes and Escape Sequences in Alphabetical Order**

Command	Hex	Decimal	Function	Page
BS	08	8	Backspace	<a href="#">page 38</a>
CAN	18	24	Cancel	<a href="#">page 38</a>
CR	0D	13	Carriage return	<a href="#">page 38</a>
EM	19 n1	25 n1	Enforced Clear Presenter	<a href="#">page 51</a>
ENQ	05	5	Clear Presenter	<a href="#">page 52</a>
ESC ACK n1	1B 06 n1	27 6 n1	Acknowledge Marker	<a href="#">page 63</a>
ESC ! n1	1B 21 n1	27 33 n1	Select Font	<a href="#">page 35</a>
ESC #	1B 23 n1	27 35 n1	Calibrate Blackmark Sensor	<a href="#">page 33</a>
ESC & 0	1B 26 00	27 38 0	Load Font	<a href="#">page 54</a>
ESC & 1	1B 26 01	27 38 1	Load Logotype	<a href="#">page 53</a>
ESC & 4	1B 26 04	27 38 4	Store current Parameter Values	<a href="#">page 53</a>
ESC & C	1B 26 43	27 38 67	Erase all Fonts	<a href="#">page 54</a>
ESC & D	1B 26 44	27 38 68	Erase Fonts 4 to 7	<a href="#">page 54</a>
ESC & F	1B 26 46 n1	27 38 70 n1	Recall Parameter Profile	<a href="#">page 54</a>
ESC & L	1B 26 4C	+27 38 76	Erase all Logotypes	<a href="#">page 53</a>
ESC & P n1...n2	1B 26 50 n1...n2	27 38 80 n1...n2	Set Parameter Value	<a href="#">page 55</a>
ESC ?	1B 3F	27 63	Reset (full)	<a href="#">page 53</a>
ESC @	1B 40	27 64	Reset (initialize)	<a href="#">page 53</a>
ESC b n1...n5	1B 62 n1...n5	27 98 n1...n5	Print Bitmap at XY-position	<a href="#">page 45</a>
ESC B n1	1B 42 n1	27 66 n1	Bold	<a href="#">page 35</a>
ESC B C	1B 42 43 n1	27 66 67 n1	Barcode Clear	<a href="#">page 43</a>
ESC B S n1...n11	1B 42 53 n1...n11	27 66 83 n1...n11	Barcode Field Specify	<a href="#">page 42</a>
ESC BW	1B 42 57 n1	27 66 87 n1	Barcode Write	<a href="#">page 43</a>
ESC d n1	1B 64 n1	27 100 n1	Make n Linefeeds	<a href="#">page 39</a>
ESC ENQ 1	1B 05 01	27 5 1	Status Enquiry	<a href="#">page 56</a>
ESC ENQ 002	1B 05 02	27 5 2	Paper-near-end Enquiry	<a href="#">page 57</a>
ESC ENQ 004	1B 05 04	27 5 4	Fonts and Logotype Enquiry	<a href="#">page 58</a>
ESC ENQ 6	1B 05 06	27 5 6	Status Report	<a href="#">page 59</a>
ESC ENQ 7	1B 05 07	27 5 7	Firmware-version Enquiry	<a href="#">page 60</a>
ESC ENQ 9	1B 05 09	27 5 9	Serial-number Enquiry	<a href="#">page 60</a>
ESC ENQ 10	1B 05 0A	27 5 10	Control board revision Enquiry	<a href="#">page 60</a>

**Table 2 • Control Codes and Escape Sequences in Alphabetical Order**

Command	Hex	Decimal	Function	Page
ESC ENQ 11	1B 05 0B	27 5 11	Head temperature Enquiry	page 61
ESC ENQ 12	1B 05 0C	27 5 12	Bootware version Enquiry	page 61
ESC ENQ c	1B 05 63	27 5 99	Device ID Enquiry	page 62
ESC ENQ P n1	1B 05 50 n1	27 5 80 n1	Parameter-setting data Enquiry	page 62
ESC FF n1	1B 0C n1	27 12 n1	Eject (run presenter)	page 51
ESC g n1...n5	1B 67 n1...n5	27 103 n1...n5	Print Logotype	page 47
ESC h n1	1B 68 n1	27 104 n1	Text Height	page 36
ESC i n1	1B 69 n1	27 105 n1	Italics	page 35
ESC j n1	1B 6A n1	27 106 n1	Paper Reverse	page 49
ESC J n1	1B 4A n1	27 74 n1	Paper Advance	page 48
ESC L n1	1B 4E n1	27 78 n1	Print Logotype at Current Position	page 47
ESC N n1	1B 4E n1	27 78 n1	Align Text	page 34
ESC NUL	1B 00	27 0	Load Firmware	page 55
ESC o n1	1B 6F n1	27 111 n1	Text and Logotype Orientation	page 34
ESC p	1B 70	27 112	Print	page 48
ESC P n1	1B 50 n1	27 80 n1	Print Self-test Printout	page 48
ESC r n1...n9	1B 72 n1...n9	27 114 n1...n9	Print Ruler Line	page 46
ESC RS	1B 1E	27 30	Cut only, no Eject	page 50
ESC s n1	1B 73 n1	27 115 n1	Send dot-line, 203 dpi	page 45
ESC t n1...n5	1B 74 n1...n5	27 116 n1...n5	Print Text at XY	page 37
ESC T n1	1B 54 n1	27 84 n1	Reversed/Inversed Text	page 36
ESC u n1	1B 75 n1	27 117 n1	Underline	page 36
ESC w n1	1B 77 n1	27 119 n1	Text Width	page 37
ESC Z	1B 5A	27 90	Go to next Top of Form	page 33
FF	0C	12	Form Feed	page 39
HT	09	9	Horizontal Tabulation	page 39
LF	0A	10	Linefeed	page 38
RS	1E	30	Cut and Eject	page 50



**Note •** In all responses from the printer the most significant byte (MSB) is transmitted first.



## Software Command Syntax

The commands in this section are grouped after what they do, and these groups are sorted in a theoretical usage sequence. It starts with commands for specifying the printed page — through text-and-graphics commands — to cut-and-present commands. System and status commands are presented at the end.

### Page Setup

Page setup is performed with parameters instead of dedicated commands. This makes it possible to store the setup in the non-volatile parameter memory. To minimize doubling of functions the page setup commands have been removed from this manual. The parameters to use are described under [Printable Area on page 86](#).

## Black Mark (Top-Of-Form) Commands

See also [Aligning Preprint And Thermal Print on page 87](#).

ESC #		Calibrate Blackmark Sensor
1B 23 n1	Hex	
27 35 n1	decimal	

Looks for a black mark, measures the contrast of the mark and sets parameter n51 to a suitable value for the detected voltage, then reverses to the start position.

To make the calibration permanent, send <ESC>&<4>, store parameter values.



**Important** • Be sure to first set up the length of the black mark and the distance between two black marks in the parameter setup.

ESC # is available in hardware revision B or higher.

ESC Z		Go to next Top of Form
1B 5A	Hex	
27 90	Decimal	

In black mark mode, an <ESC>Z starts looking for a black mark at the current position and continues for one page length. If no black mark is found, bit 3 in status byte 1 is set to 1 and the printer will report NAK 0A on the next status query.

When black mark mode is disabled, <ESC>Z will perform a form feed without cut (disregarding the setting of parameter 34).

# Text Commands

Text received by the printer is printed with the currently selected font and font attributes. Text exceeding the page width is wrapped with the line spacing selected.

ESC o n1		Text and Logotype Orientation
1B 6F n1	hex	
27 111 n1	decimal	

Changes the orientation of text and logotypes.

n = 0	Gives portrait orientation
n = 1	Gives landscape orientation

Portrait and landscape can be mixed on the same printout. There are two cursors, one for portrait and one for landscape. The cursor always starts at the top left corner of the document. Looking at the paper when it exits the printer, the portrait cursor is at the top left corner of the printout, moving to the right as text is typed, while the landscape cursor is at the top right corner, moving downwards.



**Note** • Landscape orientation can only be used with fixed document mode.

ESC N n1		Align Text
1B 4E n1	hex	
27 78 n1	decimal	

Changes the alignment of text and logotypes.

ESC N 0 =	Left
ESC N 1 =	Center
ESC N 2 =	Right

ESC ! n1		Select Font
1B 21 n1	hex	
27 33 n1	decimal	

This command selects one of eight fonts. The font design depends on which fonts have been loaded<sup>1</sup> into the printer. Make a test printout to see which fonts are available in your printer.

**Table 3 • Font selection commands**

ESC ! 0 selects normal font (font 0)	ESC ! 4 selects font 4
ESC ! 1 selects font 1	ESC ! 5 selects font 5
ESC ! 2 selects font 2	ESC ! 6 selects font 6
ESC ! 3 selects font 3	ESC ! 7 selects font 7

Lines, too long to be printed in the selected font, are automatically wrapped around.

Different fonts can be used on the same line.

Selecting an empty or invalid font location, will set bit 4 of byte 1 in the status enquiry response to "1". See [Parameter-setting Data Enquiry on page 62](#).



**Note** • If more than 256 characters are sent to the printer before an LF, the first part of the buffer contents is printed-out automatically. The text is formatted according to the already received formatting commands.

ESC B n1		BoldNormal Bold
1B 42 n1	Hex	
27 66 n1	decimal	

n = 0	Turns OFF bold (Normal)
n = 1	Turns ON <b>bold</b>

Bold is designed for normal character width and shows less and less as the width increases.

ESC i n1		ItalicsNormal Italics
1B 69 n1	Hex	
27 105 n1	decimal	

n = 0	Turns OFF Italics (Normal)
n = 1	Turns ON <i>Italics</i>

1. For font loading, see "Font loading" page .

ESC T n1		Reversed/Inversed Text
1B 54 n1	hex	
27 84 n1	decimal	

Selects normal or reversed print.

n = 0	Gives normal print, black on white
n = 1	Gives reversed print, white on black

Single words, characters, or complete text lines can be reversed.



**Note** • Reverse text and underline swaps the background with the foreground. This means that the order in which the commands are issued affect the printout if one text overlaps another.

ESC u n1		Underline
1B 75 n1	hex	
27 117 n1	decimal	

n = 0	Turns OFF underline
n = 1	Turns ON a 1 pixel thick underline
n = 2	Turns ON a 2 pixel thick underline, etc. up to n=7.

Characters, single words, or complete text lines can be underlined.

ESC h n1		Text Height
1B 68 n1	hex	
27 104 n1	decimal	

Applicable n values are 0 — 15.

n = 1	Increases the character height to 2 times the basic character height.
n = 2	Increases the character height to 3 times the basic character height etc.
n = 0	Resets the character height to the basic character height.

In combination with variable character width <ESC>w<n1>, give highly legible characters depending on the font to which the command has been applied.

Different fonts and heights can be mixed on the same print line.

ESC w n1			Text Width
1B 77 n1	hex		
27 119 n1	decimal		

Applicable n values are 0 — 7.

n = 1	Increases the character width to 2 times the basic character width.
n = 2	Increases the character width to 3 times the basic character width etc.
n = 0	Resets the character width to the basic character width.

In combination with variable character height <ESC>h<n>, give highly legible characters depending on the font to which the command has been applied.

Different fonts and widths can be mixed on the same print line.

ESC t n1...n5			data		Print Text at XY
1B 74 n1...n5	data	hex			
27 116 n1...n5	data	decimal			

Prints a text string at the specified X-Y position. The string will use the formatting set by font, reversed, width, height, bold, italics, and underline commands.

n1n2	Two byte definition of the X print position (in pixels).
n3n4	Two byte definition of the Y print position (in pixels).
n5	The number of characters in the string.
n5	The number of characters in the string. To avoid having to count characters you can set n5 to 00h (null) and then terminate the text string with null.
data	The text string. If text string length is specified with n5, the length must be exactly the number of characters specified; otherwise the printer will stop, waiting for more characters.

After the string has been printed, the cursor will return to the position it had before the string command was issued.



**Note** • The <ESC>t command clears any text preceding it on the same line. Commands will not be cleared.



**Note** • The Y print-position only works if fixed page length is used. Start a page by specifying page length for example <ESC>C<4><160>, then turn off auto page length with <ESC>c<0>.

<b>BS</b>			<b>Backspace</b>
08		Hex	
8		Decimal	

Moves the print-position one step to the left. Backspace can be used to combine characters. For instance to print a Ø, send text commands O BS / to the printer, and the slash will overprint the O.

Only one backspace can be used at a time. Excessive backspaces will be ignored.

<b>CAN</b>			<b>Cancel</b>
18		hex	

Cancels text and attributes sent before the <CAN> command on the same line.

Commands, are not cancelled.

<b>CR</b>			<b>Carriage Return</b>
0D		hex	
13		decimal	

By default, carriage return is ignored.

By changing the default settings, you can:

1. Interpret is as <CR> which returns print position to beginning of line without line feed.
2. Interpret <CR> as <CR><LF> which inserts line space as specified by the line spacing setting (see parameter p13), and returns the print position to beginning of the line.

See “Carriage return and line feed behavior” under *CR/LF Behavior on page 78*.

<b>LF</b>			<b>Linefeed</b>
0A		hex	
10		decimal	

Linefeed is interpreted as <CR><LF> by default. This inserts line spaces as specified by the line spacing setting (see parameter p13), and returns the print position to beginning of the line. <LF> also converts text from the input buffer to pixel lines and stores them in the line buffer, ready to be printed.

By changing the default settings, you can:

1. Interpret <LF> as Linefeed. This inserts line space as specified by the line spacing setting (see parameter *13 on page 77*), without returning the print position to the beginning of the line.
2. Ignore <LF>.

See *CR/LF Behavior on page 78*.

ESC d n1			Make n Linefeeds
1B 64 n1		hex	
27 100 n1		decimal	

Executes the number of linefeeds as defined by variable n1. The length of each line feed is determined by the default value for selected font (see parameter [13 on page 77](#)).

The print position is returned to the beginning of the line. Any text on the line is lost. To avoid losing text, send an <LF> before sending <ESC>d<n>.

FF			Form Feed
0C		hex	
12		decimal	

Prints data from the input buffer and feeds the paper to the top of the next page.

In fixed document length (FORM-mode) this command prints data in the input buffer and feeds the paper to the top of next page.

In variable document length mode <FF> advances to the minimum page length. If the printout already is longer than the minimum page length, <FF> does not feed the paper at all.

In black-mark mode, the <FF> command looks for a black mark, see <ESC>Z

If "Auto cut" is set to 1 (see [Auto Cut After FF on page 78](#)), <FF> effect form-feed, cut, and eject.



**Note** • Use parameter p37 and p38 to define page length.

HT			Horizontal Tabulation
09		hex	
9		decimal	

Shifts the current print position to the next Tab position.

Set tab positions with parameters p15 – p30.

## Barcode Commands

TTP 7030 can print EAN 8, EAN 13, EAN128, UPC, 2-of-5 Interleaved, ISBN, Code39 and Code128 barcodes with its standard firmware. A special firmware is available where the barcodes are replaced with the PDF 417 2D barcode. See [Firmware on page 104](#), and PDF417 command.



**Example •** The example below will print an EAN barcode with height = 10 mm, 15 mm in from the right margin.

<ESC>BS<0><0><78><0><0><C><0><50h><0><2>0h> (hex)

<ESC>BW<0>733104000099<0> (hex)

<LF>

<RS>

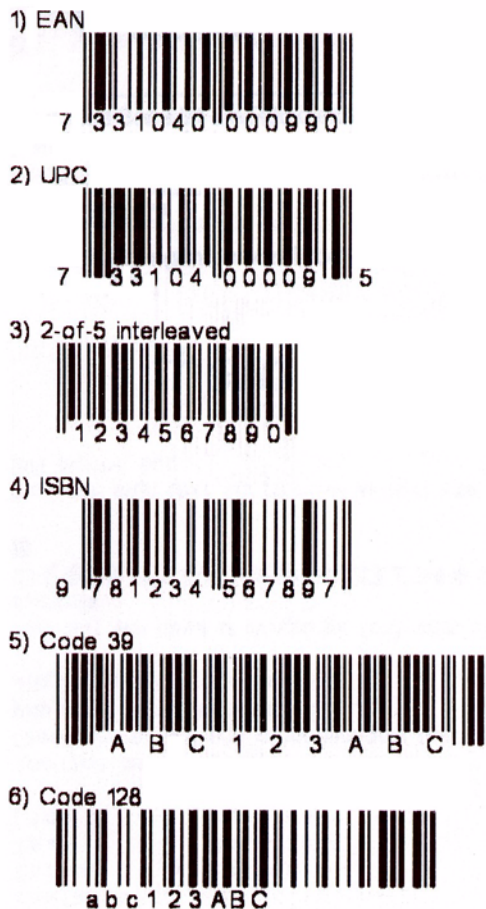
### Code 128 / EAN128

The following codes select function codes in Code 128:

Name	Dec	Hex
FNC1	193	C1
FNC2	194	C2
FNC3	195	C3
FNC4	196	C4



**Figure 16 • Samples of barcodes**



Selecting code 128 and starting the data string with FNC1 generates an EAN128 code.

ESC B S n1...n11		Barcode Field Specify
1B 42 53 n1...n11	hex	
27 66 83 n1...n11	decimal	

Bar codes can only be printed in portrait mode unless Fixed Document Mode is selected with parameter n36.

The command reserves an information field as a bar code field. The command also identifies the type, number of digits, and the configuration of bars to be placed in the bar code field.

n1	Specifies the bar code field No. (0—15). Bar code fields may be specified in any order.
n2n3	Sets the X coordinate of the bar code field origin (n2 is the higher-order and n3 the lower-order byte). n2 and n3 must be 1-byte hexadecimal or decimal numbers. The values must not place the bar code outside the total pixel count that can be handled by the printer.
n4n5	Must be specified but the values are discarded by the printer.
n6	Specifies the number of bar code digits, but is ignored by the printer.
n7n8	Specifies the height of the bars.
n9	Specifies the type of bar code. The following types are supported.
n9 = 0	EAN 8 or 13 (auto detect). The printer calculates the necessary check digit.
n9 = 1	UPC
b9 = 2	2/5 Interleaved (even number of characters must be sent)
n9 = 3	ISBN
n9 = 4	Code128 (Start data string with C2h (FNC1) to encode EAN128)
n9 = 6	Code39
n10	Specifies the thickness of the narrow bar 0=1 pixel, 1=2 pixel, and so on.
n11	Specifies the wide-bar-to-narrow-bar ratio. Only used in Code 39 and 2-of-5 interleaved where different ratios are allowed

ESC	BW	n1	nx		Barcode Write
1B	42 57	n1	nx	Hex	
027	066 087	n1	nx	Decimal	

Writes data to the bar code field reserved by the <ESC>BS command.

n1	Specifies the field No. Range 0 to 15. Fields can be specified in any order but other values than 0 to 15 are ignored.
n2 . . . nx	Specifies bar code data bytes. To create a bar code add-on, insert a space character and then the data for the add-on. Two of five characters are allowed of the add-on.
NUL	must be placed at the end of the bar code data.

Any invalid bar code character terminates the command, and prints <Invalid barcode> on the printout.

➔ **Example** • This example will print one barcode with height = 10 mm and moved 10 mm to the right.

```
<ESC>BS<h00><h00><h32><h00><h00><h0C><h00><h50><h00><h02><h00><»»
```

```
<ESC>BW<h00>733104000099<h00><»»
```

```
<RS><»»
```

ESC B C		Barcode Clear
1B 42 43 n1	hex	
27 66 67 n1	decimal	

Clears the bar code field reserved by command <ESC>BS.

n	Specifies which bar code field to clear. The range is 0 to 15. The fields may be cleared in any order.
---	--

ESC		n1	nx		Barcode Print (PDF 417)*
1B	7C	n1	nx	Hex	
027	124	n1	nx	Decimal	

\*, PDF 417 requires special firmware in the printer. See “Firmware” on page

This command positions and prints a PDF 417 2D barcode.

<ESC> "|" <type=5> <x\_msb> <x\_lsb> <y\_msb> <y\_lsb> <rows> <cols> <errLevel>  
<dotHeight> <scale> <len\_msb> <len\_lsb> <data>

n1	Specifies the type of bar code. The following types are supported:
n1 = 5	PDF417
n2n3	<x_msb> <x_lsb> Sets the X-coordinate of the bar code field origin.
n4n5	<y_msb> <y_lsb> Sets the Y-coordinate of the bar code field origin. The Y-coordinate are discarded in variable document mode.
n6	Rows
n7	If <rows>, <cols> are 0 the printer will automatically set appropriate values.  Columns
n8	Error level, 0=auto, 1=Level0, 2=Level1, etc.
n9	Dot Height, sets how many pixel lines each row consists of.
n10	Scale
n11n12	Len. If set to 00h, <nul> indicates the end of the data block <data>. If <len is set to other values the value indicates the no of bytes in <data>
<data>	data to be encoded



**Example •** To print Zebra as a PDF 417 barcode, send the following to the printer:

<ESC><124><005><000><000><000><000><000><000><003><003><000><000>Zebra<000>

The barcode will look like this:



## Graphics Commands

In 80 mm printers, the line length is 72 bytes and in 112 mm printers it is 104 bytes.

ESC b n1...n5	data		Print Bitmap at XY-position
1B 62 n1...n5	Data	hex	
27 98 n1...n5	Data	decimal	

Prints a black & white Windows bitmap (BMP-file) at the specified X-Y position. The bit-map must be a complete uncompressed Windows bitmap where the data starts with BM. Max size is limited to the free RAM printed on the self-test printout.

n1	Always 0
n2n3	Two byte definition of the X print position (in pixels).
n4n5	Two byte definition of the Y print position (in pixels).
data	Bitmap data.

After the bitmap has been printed, the cursor will return to the X-position that it had before the bitmap command was issued.

Selecting horizontal mode (with <ESC>0<0>) prints the image in portrait orientation, while selecting the vertical mode (with <ESC>0<1>) prints the image in landscape orientation.



**Note** • The Y print-position and horizontal/vertical orientation only works if fixed page length is used.

ESC s n1	data		Send Dot-line, 203 dpi
1B 73 n1	Data	Hex	
27 115 n1	Data	Decimal	

Sends one line of dot data. This command is used to build images, one dot line at a time by the printer driver and should not be combined with text commands.

n	Determines the number of bytes. Range: 1-255.
<data>	1 – x bytes, where x is the printhead width in bytes. The printhead width is in the spec. of the printer.



**Example** • 80 mm printers use 72 bytes

**Example** • 112 mm printers use 104 bytes



**Caution** • Always send the No. of bytes that you specify!

If more than the specified No. of bytes are received, the rest of the bytes will be interpreted as text or commands. This can cause any kind of problems in the printer as graphics data can contain any hex value. If you specify less data then the actual printhead width, the printer will fill the rest of the dot line with spaces.

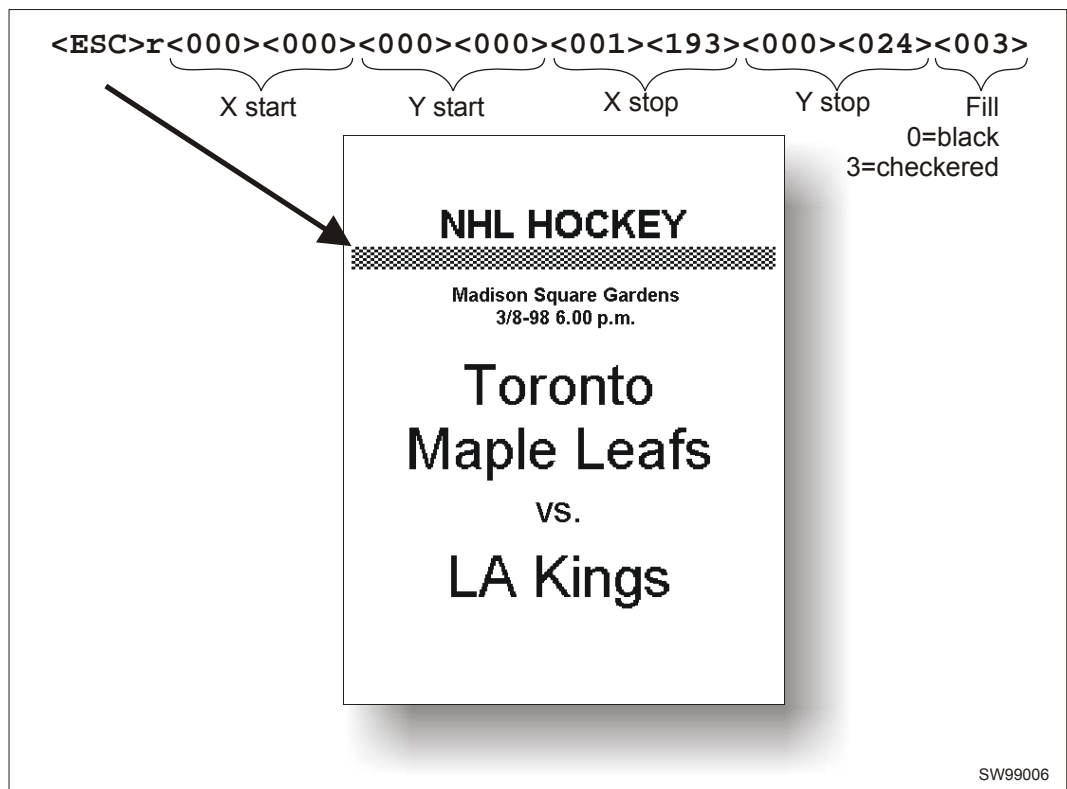
ESC r n1...n9		Print Ruler Line
1B 72 n1...n9	hex	
27 114 n1...n9	decimal	

Prints a ruler line across the paper.

A ruler line is normally used to divide the printout into logical parts to make it easier to read. A ruler line is actually an area defined by a start X-Y position and a stop X-Y position. This area is filled with black or a checkered pattern.

n1n2	Two byte definition of the X start position
n3n4	Two byte definition of the Y start position
n5n6	Two byte definition of the X stop position (must be larger than n1n2)
n7n8	Two byte definition of the Y stop position (must be larger than n3n4)
n9	Fill pattern, 0=black, 3= Checkered

Figure 17 • Printout with checkered ruler line



ESC g n1...n5			Print Logotype
1B 67	n1...n5	hex	
27 103	n1...n5	decimal	

Prints a customized logotype<sup>2</sup> stored in the flash PROM. See also [Logotypes on page 66](#).

n1	One-byte logotype identification No. (0—15)
n2n3	Two-byte definition of desired print position in X-direction measured from left-hand edge of the page (see <a href="#">Printable Area on page 86</a> regarding definition of “page”). X-direction is perpendicular to the paper transport direction.
n4n5	Two-byte definition of desired print position in Y-direction. In variable document mode the Y-position is ignored. The resolution is 0.125mm in both X and Y directions

ESC L n1			Print Logotype at Current Position
1B 4C	n1	Hex	
27 76	n1	Decimal	

Prints a customized logotype stored in the flash PROM at the position of the cursor. The bottom line of the logotype is positioned at the baseline of the text on the line. If the logotype is higher than the text, the line spacing is increased.

See also [Logotypes on page 66](#).

n	One-byte logotype identification No. (0—15)
---	---

2. For logotype loading, see [ESC & 1 on page 53](#).

## Print Commands

ESC p		Print
1B 70	Hex	
27 112	Decimal	

This command makes the printer print the contents of the line buffer.  
Text is converted from text to pixel lines and stored in the line buffer when an LF is received.  
If the line buffer is empty when <ESC>p is received, nothing is printed.

Text to be printed <LF><ESC>p prints "Text to be printed" on the paper.

Printout is effected automatically at:

Cut	<S> and <ESC><RS>
Form feed	<FF>
Clear presenter	<ENQ>
Run presenter	<ESC><FF><n>
Print buffer full	
Press on FF-button	

ESC P n1		Print Self-test Printout
1B 50 n1	Hex	
27 80 n1	decimal	

This command makes the printer generate a self-test page based on the current parameter settings and print that page. The parameter values printed are the ones currently being used. They can differ from Power-ON default values if for example a printout from Windows has been done before <ESC>P is sent to the printer. To make a self test printout with the Power-ON default settings, power up the printer with the Feed button pressed.

n = 0	Gives standard self-test printout.
n = 1	Gives a character set printout using the font selected by parameter p14.

ESC J n1		Paper Advance*
1B 4A n1	hex	
27 74 n1	decimal	

\*. DO NOT use ESC J n, ESC j n, or ESC Q n in fixed page mode

The value n represents the number of dot lines the paper is to be transported forwards. Range: 1–255.

A dot line is 0.125 mm, and 255 dot lines equal approximately 32 mm.



ESC j n1		Paper Reverse
1B 6A n1	hex	
27 106 n1	decimal	

The value n represents the number of dot lines the paper is to be transported backwards.  
Range: 1–255.



**Caution •** Paper reverse may cause problems when used at the top of the page. Doing so may cause paper jam when feeding forward again. The printer may also lose grip of the paper. NEVER reverse more than 10 mm at top of page!

A dot line is 0.125 mm, and 255 dot lines equal approximately 32 mm.

## Cut And Present Commands

RS		Cut and Eject
1E	Hex	
30	Decimal	

Effects a paper cut-off and an eject through the presenter module. The RS command automatically gives the eject length of 50 mm in addition to the factor stored in parameter p47.

If the printout length is too short, paper-feed is added until the minimum printout length (set by parameters 37 and 38) is reached, before execution of the Cut command.



**Note** • The cut position is 17 mm before the print line. This makes the last 5 lines on a page end up in the beginning of the next page. To get the cut after the text, Please set parameter 49 to auto.

You can also use <RS> together with the paper advance command:

<ESC>J<160><RS>

Gives a cut & eject after the last text line.

ESC RS		Cut Only, no Eject
1B 1E	Hex	
27 30	Decimal	

Effects paper cut-off only.

Eject can be effected with the <ESC><FF><n> command (see [Eject \(run presenter\) on page 51](#)).

To avoid thin strips of paper in the printer, multiple cut commands without paper feed in-between will not be performed. If the printout length is too short, paper-feed is added until the minimum printout length is reached, before execution of the cut command.

See Also Note on cut position for the <RS> command above.



**Note** • Use the cut command if you want full control over the printer from your system. But remember that you also must add commands to feed to the correct cut position and eject the paper so that the customer can get hold of it.



**Note** • Top margin settings that moves the paper counts as paper feed.

ESC FF n1	Eject (run presenter)	
1B 0C n1	hex	
27 12 n1	decimal	

<ESC><FF> ejects the document through the presenter module. Variable n represents the number of eject-steps.

One step is approximately 2 mm

The maximum number of steps is 255

Normally, this command is placed after a cut command (<ESC><RS>) to partially eject the printout to the customer. Set the number of eject steps so that a good portion of the printout is retained in the presenter module, avoiding that the printout drops to the floor.

Another use of the command is to eject a part of a long document without preceding cut. The reason to do this is to limit the size of the loop build-up in the presenter.



**Note •** The loop is limited to the value set by <ESC>f<n> to avoid paper jam. The default setting of n=18, gives a loop of just above 0.5 m. When this length has been looped, the printer presents that part of the printout. Then, without cutting the paper, it continues to print the rest of the printout.

**Figure 18 • Approximate Settings For Different Eject**

Feed, cm	n1	Feed, cm	n1	Feed, cm	n1	Feed, cm	n1	Feed, cm	n1
1	6	6	36	11	55	16	69	21	82
2	15	7	40	12	58	17	71	22	85
3	21	8	43	13	62	18	73	23	88
4	27	9	48	14	65	19	76	24	92
5	33	10	52	15	67	20	79	25	95

EM	Enforced Clear Presenter	
19 n1	Hex	
25 n1	Decimal	

Same function as <ENQ> but overrides the Retract and Retain parameter (p45) with another presenter behavior. The function of n can be 0 to 255 0-99 ejects while 100-255 retracts (see the description of parameter 45). The command will clear the presenter immediately (with printing synchronization).

<EM><000>	Ejects the presented page
<EM><100>	Retracts the presented page

<b>ENQ</b>		<b>Clear Presenter</b>
05	Hex	
5	Decimal	

Clear the paper-path in the presenter form printouts. For example, to eject a document not removed during the previous print/cut/eject operation. Parameter No. 45 controls how the presenter is cleared.

## System Related Commands

<b>ESC ?</b>		<b>Reset (full)</b>
1B 3F	Hex	
27 63	Decimal	

Restarts the printer with a complete reset. This is the same as power off/on.

<b>ESC @</b>		<b>Reset (initialize)</b>
1B 40	Hex	
27 64	Decimal	

Terminates the processing and initializes the control board. The control board is reset to default-values (same as after power ON). Do not use this command as part of a print data command string.

<b>ESC &amp; 1</b>		<b>Load Logotype</b>
1B 26 01	Hex	
27 38 1	decimal	

Stores a logotype bitmap in the flash PROM. The logotype is printed with the <ESC>g and <ESC>L commands, see [ESC L n1 on page 47](#) and [ESC g n1...n5 on page 47](#). Also see [Logotypes on page 66](#).



**Important** • If the logo width exceeds the print width, the operation is aborted.

<b>ESC &amp; L</b>		<b>Erase all Logotypes</b>
1B 26 4C	Hex	
27 38 76	decimal	

Erases all logotypes stored in the flash PROM.



**Note** • This command is only executed if at least one logotype has been loaded.

<b>ESC &amp; 4</b>		<b>Store Current Parameter Values</b>
1B 26 04	Hex	
27 38 4	decimal	

Stores the current setting of all parameter values in the setting memory. These parameters are then used as default parameters. Storing takes approximately 4 seconds. The printer activates the presenter motor temporarily to indicate that storing is complete.

ESC & 0		Load Font
1B 26 00	hex	
27 38 0	decimal	

This command is used to load a font to the printer flash PROM. The font is placed in the first free address position in the order of load sequence.

A Zebra font-file consists of a header containing data describing the font as well as data for each individual character in the font.

Fonts can be designed with the font editor and loaded or deleted with the software available for free on the Zebra web site. The font loading and deleting commands described here should only be used if you do not work in the Windows environment.

For complete specification of the font format, see [Font Loading on page 64](#).



**Note** • The available font memory is printed on the self-test printout. A maximum of 8 fonts can be addressed. Exceeding any of these limits will cause this command to fail.

ESC & C		Erase all Fonts
1B 26 43	Hex	
27 38 67	decimal	

Erases all fonts stored in the flash PROM.



**Note** • This command is only executed if at least one font has been loaded.

ESC & D		Erase Fonts 4 to 7
1B 26 44	Hex	
27 38 68	Decimal	

Erases fonts number 4–7. Fonts 0–3 are not affected by this command.

The operation is complete when the printer resets automatically and activates the presenter motor temporarily. Takes approximately 4 seconds.

ESC & F		Reset Parameter Profile
1B 26 46	Hex	
27 38 70	decimal	

This command resets the parameters of the printer to factory default.

Temporarily sets all parameters to predefined values that are stored in the printer. To keep the values as default, store them in the flash PROM with command <ESC>&<4>.

Unless you save the parameters, a reset command or power OFF/ON will return the parameters to the settings stored in the flash PROM.

ESC & P n1...n2		Set Parameter Value
1B 26 50 n1...n2	hex	
27 38 80 n1...n2	decimal	

A number of bytes in the flash PROM hold various parameter values called *default parameters*. One or several of them can be overridden temporarily with this command.

n1	Parameter number, range 1 -255.
n2	Parameter value.

See [Default Parameter Settings on page 69](#).

The permanently stored parameters will be used again after a printer-reset command or at power ON.

The temporary values can, however, be stored in the flash PROM as permanent values with command <ESC>&<4>.

## Set several parameters at once

ESC & P <0> <FromPar><ParCount><Data>

FromPar is the parameter number to start writing and ParCount is the number of bytes being sent. For every byte sent the parameter number is incremented.



**Example** • This example sets the first 5 tabs to 5, 10, 15, 20, and 25.  
(FromPar 15, ParCount 5)

<ESC>&P<0><15><5><5><10><15><20><25><>>

ESC NUL		Load Firmware
1B 00	Hex	
27 0	Decimal	

This command should be used when you integrate firmware loading into your kiosk program.



**Note** • Utility programs to load firmware into the printer are available from <http://www.zebra.com>.

This command should only be used when loading new firmware into the printer. See also [Firmware on page 104](#)

## Status Reporting Commands

See also [Status Reporting on page 68](#).



**Note** • All status commands are immediate, that is they pass the print queue and is answered directly.

ESC ENQ 1		Status Enquiry
1B 05 01	hex	
27 5 1	decimal	

A status enquiry results in response ACK (06h) if all sensors are clear, but NAK (15h) + code if one or more sensors report fault condition.

**Figure 19 • Error Codes**

Error code	Meaning
ACK	OK (printer is operable)
NAK 1	Paper left in presenter module. Attempt to clear the paper path failed.*
NAK 2	Cutter jammed
NAK 3	Out of paper
NAK 4	Printhead lifted
NAK 5	Paper-feed error. No paper detected in presenter although 10 cm has been printed. Paper might be wound around the platen or, in some way, has been forced above the presenter module.
NAK 6	Temperature error. The printhead temperature has exceeded the 60 °C maximum limit.
NAK 7	Presenter not running (no feedback from code wheel)
NAK 0A	Black mark not found
NAK 0B	Black mark calibration error
NAK 0C	Index error
NAK 0D	Checksum error
NAK 0E	Wrong firmware type
NAK 0F	Firmware cannot start because no firmware is loaded or firmware checksum is wrong.
NAK 10	Waste bin timed out. If the customer doesn't take the paper and the printer clears the presenter due to a timeout, the pending error bit is set and error code NAK 16 is reported.
NAK FF	Undefined error

\*. From firmware version 3.00, the printer will retry three times (cut + clear presenter), when failing to clear the presenter.





**Note •** Errors 02, 05 and FF are terminal faults that require you to reset the printer before it will be operable again. The printer automatically recovers from the other error conditions as soon as the error is corrected.

A status enquiry command can only return one status code at a time. If there are two or more simultaneous errors, each error condition should be cleared and the status enquiry repeated in order to get a complete report of all status codes

The host computer cannot be certain that all error conditions have been cleared until an **ACK** is received.

The possible error conditions are reported in the above order.



**Note •** If you want to read out all status information directly, use <ESC><ENQ>E.

ESC ENQ 002		Paper-near-end Enquiry
1B 05 02	hex	
27 5 2	decimal	

This command requests a paper-near-end sensor (paper low) status from the printer in a 1-byte format.

Value = 1	indicates “No paper”
Value = 0	indicates “Paper present” at the sensor position



**Note •** The status of the sensor is sampled every time the printout is cut. If three succeeding samples show "no paper", the status reply changes to 00. This is to prevent false alarm if the side of the paper roll is not clean. If you want the current status of the sensor, use <ESC><ENQ><6> and extract the paper-near-end bit.

ESC ENQ 004		Fonts and Logotype Enquiry
1B 05 04	hex	
27 5 4	decimal	

Requests multiple bytes of information regarding loaded fonts and logotypes.



**Example •** (↵ = CR LF)

```

Send→                               ESC ENQ 0d

Read←                               0:7504 TTPMono 9↵
1:14618 Arial 9↵
2: ↵
3: ↵
4: ↵
5: ↵
6: ↵
7: ↵
Free font memory:246122↵
00: ↵
01: ↵
02: ↵
03:14 110 Recycle↵
04: ↵
05:103 65 Warning↵
06: ↵
07: ↵
08: ↵
09: ↵
10: ↵
11: ↵
12: ↵
13: ↵
14: ↵
15: ↵
16: ↵
Free logotype memory:189512↵

```

ESC ENQ 6		Status Report
1B 05 06	hex	
27 5 6	decimal	

Results in a 2-byte response, reflecting the status of each sensor. This command is intended as a go/no go indication. When everything is OK, this status report returns 0.



**Note** • If no weekend sensor is installed, 64 is returned when everything is OK. If no weekend or paper-near-end sensors are installed, 64+2=66 is returned when OK.

**Figure 20 • Sensor Status**

First byte, bit No.:								Second byte, bit No.:							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Pending error code*	Print data exists**	Power has been OFF***	.	Error Black mark	Paper at wastebin	.	Buffer overflow	Wastebin fitted	Weekend sensor	Printhead lifted	Cutter not home	Paper at presenter	.	Paper-near-end****	Out of paper
Mask first reply byte with EDh								Mask second reply byte with FBh							



**Note** • Mask away the undefined bits in your application program to avoid having to change the application, if the future releases starts using them.

*	This bit indicates that an error code is available. Use <ESC><ENQ><1> to fetch it.
**	This bit tells you that there are data in the printer that have not yet been printed. There are two possible reasons for that: 1) The last command received by the printer was not a command that triggers a printout. 2) The printer is printing
***	When parallel cable is connected, both printer and host computer must have been off to set this bit. This is because the interface powers the RAM in the printer.
****	This paper-near-end bit differs from the <ESC><ENQ><2> response, see <a href="#">Paper-near-end Enquiry on page 57</a> .

Bits 0, 3, and 5 in the first byte are reset when read.

ESC ENQ 7		Firmware-version Enquiry
1B 05 07	Hex	
27 5 7	decimal	

Results in a 2-byte response representing the version of the installed firmware.

The first byte represents major versions, and the second byte minor versions.

If no firmware is loaded, the printer will answer with 00h.



**Example •**

Send→<ESC><ENQ><7>

Read← <2><29>

That is, a response with the value <1><29> indicates version 2.41.

ESC ENQ 9		Control Board Serial-number Enquiry
1B 05 09	hex	
27 5 9	decimal	

Results in an 6-byte response representing the serial number of the printer's control board.



**Example •**

Send→<ESC><ENQ><9>

Read←00 00 02 02B 0C6 028 (hex), or 0 0 2 43 198 40 (dec)

ESC ENQ 10		Control Board Revision Enquiry
1B 05 0A	hex	
27 5 10	decimal	

Results in a 1-byte response representing the control board revision. A minus sign indicates that no revision has been made, while A indicates the first revision, and so on.



**Example •**

Send→<ESC><ENQ><10>

Read←n Where n can be 'A' (ASCII) or 41 (hex) or 65 (dec)

ESC ENQ 11		Head Temperature Enquiry
1B 05 0B	hex	
27 5 11	decimal	

Results in a 1-byte response representing the temperature of the Printhead.



**Example •**

Send→<ESC><ENQ><11>

Read←n Where n is a value representing the approximate temperature in Celsius.

ESC ENQ 12		Bootware Version Enquiry
1B 05 0C	hex	
27 5 12	decimal	

Results in a 2-byte response representing the version of the installed bootware.

The first byte represents major versions, and the second byte minor versions.



**Example •**

Send→<ESC><ENQ><12>

Read←<1><30>

That is, a response with the value <1><30> indicates version 1.48.



**Note •** The TTP 7030 does not store boot program in the flash memory so this query will always be answered with <0><0>.

ESC ENQ c		Device ID Enquiry
1B 05 63	hex	
27 5 99	decimal	

Results in a string containing the device ID in the Windows Plug and Play string format. The two first bytes represent the string length.



Example •

Send→ <ESC><ENQ><99>

Read← 0 106 This indicates that the string is 104 characters (plus two characters indicating the string length)

Read← "MANUFACTURER:Zebra;COMMAND  
SET:None;MODEL:TTP7020;CLASS:PRINTER;DESCRIPTION:Ticket  
Printer TTP7020;"



**Note •** The string shown here is just an example. Read out the actual string from your printer.

ESC ENQ P n1		Parameter-setting Data Enquiry
1B 05 50 n1	Hex	
27 5 80 n1	Decimal	

This command requests information about the setting of parameter n1, that is, the parameter value stored in flash PROM or any parameter value temporarily set by other ESC commands.

n1= 1	gives the setting of parameter 1, etc.The parameter names are listed under <a href="#">Summary Of Parameter Settings on page 72</a> .
n1 = 0	gives a response where the first two bytes specifies the length of data to come (high-byte, low byte), and followed by a block of data for all parameters in the temporary setup.

ESC ACK n1		Acknowledge Marker
1B 06 n1	hex	
27 6 n1	decimal	

n1	One-byte marker. Range 1h to 255h
----	-----------------------------------

The "acknowledge marker" n is placed in the command queue and when the execution of commands reaches the marker it is sent back to the host computer. This is an addition to the status commands that pass the queue and are answered immediately when received.



#### Example •

"Print data" <LF><ESC>p<ESC><ACK><1>

Wait for <1>

<RS><ESC><ACK><2>

Wait for <2>

The printer will send <1> when <print data> has executed and <2> when the ejecting has been performed.



**Note •** You must wait for the acknowledge marker to return before sending any more data to the printer.



**Note •** Acknowledge marker cannot be used for events that write to the flash PROM, for instance font loading. This is because the writing procedure erases the buffer, including the markers, and uses all RAM in the printer.

## Font Loading

The printer can store 8 fonts in its flash PROM. The memory available for fonts is printed on the self-test printout. The character size is fixed<sup>3</sup>, so you must load one font file for each character size you require. The fonts are given font numbers when they are loaded into the printer. The first font is assigned number 0 and the next font 1 etc. up to font 7. Parameter p14 “Font Selection” will determine what font to use when no font selection command has been received (see [Default Parameter Settings on page 69](#)).

You cannot erase a single font, but must erase font 4-7 with command <ESC>&D, or all eight fonts with <ESC>&C, then reload the fonts you wanted to keep.

Windows software for font generation and management is available on the Zebra web site. If you need to load fonts in a non-Windows environment, use the <ESC>&<NUL> command.

The time required for processing the font data that is loaded is typically 15–20 seconds per font, excluding transfer time. During this time, any data sent to the printer will be lost.



**Note** • The font processing ends with a reset. The presenter motor runs momentarily to indicate that the printer is ready to be used.



**Caution** • Loading to the flash PROM will erase the RAM completely since the RAM is used during the loading process. Any print data residing in RAM will thus be lost.

## File Format

A font consists of a header describing the font, then data for every character in the font. The header has to be downloaded even if the font consists of a single character only. Below is a description of the font header.

1 byte	Reserved	Should always be 0 (zero)
1 byte	Reserved	Should always be 0 (zero)
1 byte	Char. width (X)	The number of bytes required for the width of one character, usually 2 or 3. Range 1 to 8.
1 byte	Character pitch	The maximum width of one character in the set. This value is used for tab position calculation. Range 1 to 255.
1 byte	Char. height (Y)	The maximum height of one character matrix measured in pixels. This is also the minimum line spacing for this character set.
27 byte	Font name	String of characters used to identify the character set.

This will be printed on status printouts. (E.g. Swiss 10 cpi.)

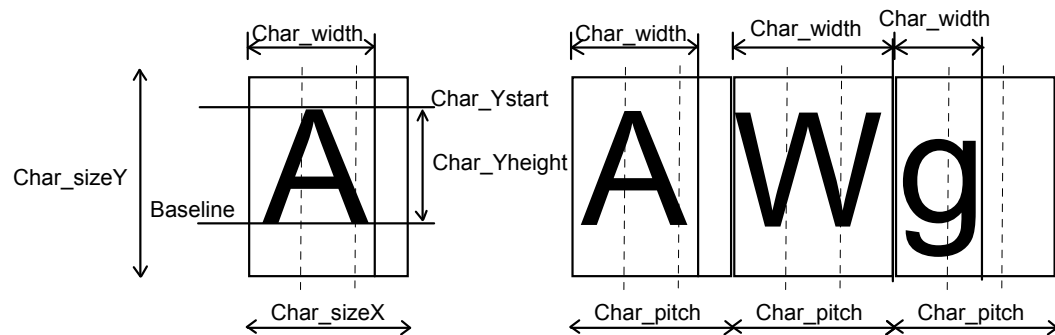
Char\_matrix table: 256 records, each containing 3 bytes.

3 byte Char\_width (pixels) + Char\_Ystart(pixels) + Char\_Yheight(pixels)

3. Multiple height, and width commands can be used on all fonts.



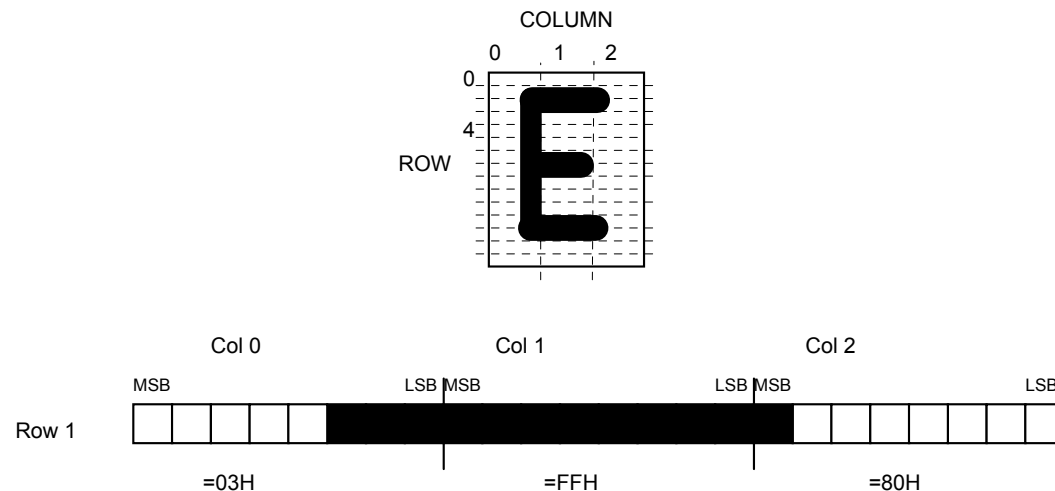
Char\_bitmap data: Bitmap data for all characters that are to be defined.



## Character bitmap data:

A character is made up of a bitmap the size of which is:

Char. width (X) \* Char. Height (Y) bytes.



The bitmap data consists of bitmap patterns for each character in a character set for which the parameter Char\_width in the Char\_matrix table is set to a value between 1 and 24. A character that has its Char\_width set to zero, is not included in the bitmap data.

The bitmap for one character is then defined according to the following table:



**Example •** In this example, each row consists of 3 columns equal to 3 bytes.

(COL 0, ROW Ystart) , (COL 1, ROW Ystart) , (COL 2, ROW Ystart)

(COL 0, ROW Ystart+1) , (COL 1, ROW Ystart+1) , (COL 2, Ystart+1)

(COL 0, ROW Ystart+Yheight), (COL 1, ROW Ystart+Yheight ) , (COL 2, ROW Ystart+Yheight)

In order to minimize the required storage space, only rows between Ystart and Ystart+Yheight are included in the character bitmap.

## Logotypes

Up to 16 logotypes can be stored in the flash PROM of the printer. The logotypes can be positioned and printed out with commands <ESC>g or <ESC>L.

The exact number of logotypes and their sizes is determined by the total amount of memory used for fonts, logotypes and loaded firmware. Make a test printout to see how much memory is available.

## Loading

Windows software that converts black and white BMP bitmap files to logotypes and load them into the printer is available on the Zebra web site. If you need to load logotypes in a non-Windows environment, use the <ESC>&1 command.

The time required by the printer to process logotype data, excluding transfer time from the PC, is typically 15 to 20 seconds, per logotype. During this time, any data sent to the printer will be lost.

## File Format

A header containing information about the logotype number, size and logotype name shall define each loaded logotype. Immediately after the header follows the actual bitmap of the logotype.

<ESC>&1 <Header><Bitmap>

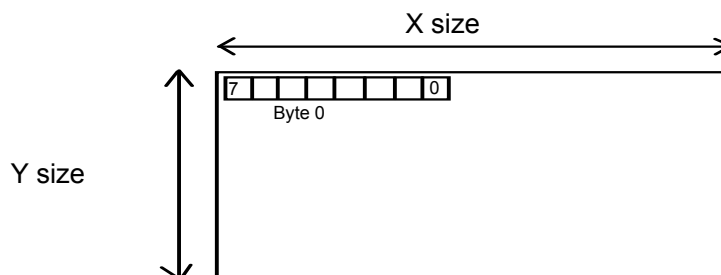
### Header

Byte 0	Logotype number used to identify the logotype when printing.
Byte 1	X size measured in bytes.
Byte 2	Y size measured in pixels.
Byte 3—15	A logotype name that will be printed on test printouts.

### Bitmap

The bitmap **must** have exactly (X size \* Y size) number of bytes. 1=black, 0=white dot.

Bit No. 7 in byte 0 represents the top left corner of the logotype.



## Printing

To print a logotype you can use two commands, `<ESC>L<n>`, prints the logotype at the current cursor position, just like any character. `<ESC>g<n1><n2><n3><n4><n5>` prints the logotype at a specified X-Y position.

n1	One byte logotype number, (0—15)
n2n3	Two byte X position measured in pixels from the left hand edge of the print window.
n4n5	Two byte Y position in pixels from top of the page. These bytes must always be inserted but they are ignored in variable-page-length mode where logotypes are always printed at the current Y-position.

## Erasing

All logotypes are erased with the `<ESC>&L` command.



**Caution •** Loading to the flash PROM will erase the RAM completely since the RAM is used during the loading process. Any print data residing in RAM will thus be lost.

## Status Reporting

The printer is equipped with a number of sensors that report the printer status and various error conditions such as out-of-paper, previous printout not removed, etc.

A good practice in unattended printer applications is to check for errors and paper availability before printing.

1. Send a Status Report Query (<ESC><ENQ><6>, see [page 59](#)) and check that the answer is "No errors"
2. If an error is indicated, read out the error message with Status Request (<ESC><ENQ><1>, [page 59](#)), and take appropriate actions. Repeat this step until no more error code is available. If weekend sensor signals that paper is below this level, check again after next document is printed. If the sensor still signals a level below the weekend level after three successive print/check cycles, report the condition to the systems supervisor so that he can schedule a service visit to the printer. This three-cycle check is to ensure that dirt on the side of the roll does not cause the alarm.
3. Send a paper-near-end query (<ESC><ENQ><2>, see [page 57](#)) to see if the sensor reports low paper level.
4. If paper-near-end is indicated, report the condition to the systems supervisor so that he can schedule a service visit to the printer.
5. Print the printout.



**Important** • A status reply must be read! Sending a second status query without reading the reply of the first query may lock the printer.



**Note** • When using a multitask OS, status queries and responses may not be transferred immediately from your application to the printer and vice versa. So write your program in such a way that it repeats the query if it gets a timeout or an invalid reply. Good practice is to ask once every 2-3 seconds, five times before giving up.



**Note** • You should construct your application in such a way so as not to request status while printing, as this can result in loss of data.

## Default Parameter Settings

Some of the printer settings can be stored in the flash PROM so that they will be used also after power OFF.

The stored parameter settings are printed out on the self-test printout.

The number in front of the function is the parameter number (n) used when setting the parameter with the command `<ESC>&P<n><v>`.

You can use the parameter settings pretty much like normal commands. Either send the parameter values with each printout, or set them up once and then send `<ESC>&<4>` to store all settings in the flash PROM.

You can always return to factory default settings by sending `<ESC>&<F>`, and then storing those settings with `<ESC>&<4>`.



**Note** • The parameters can be locked so that no changes are possible. Check parameter 53 on the self-test printout to find out.



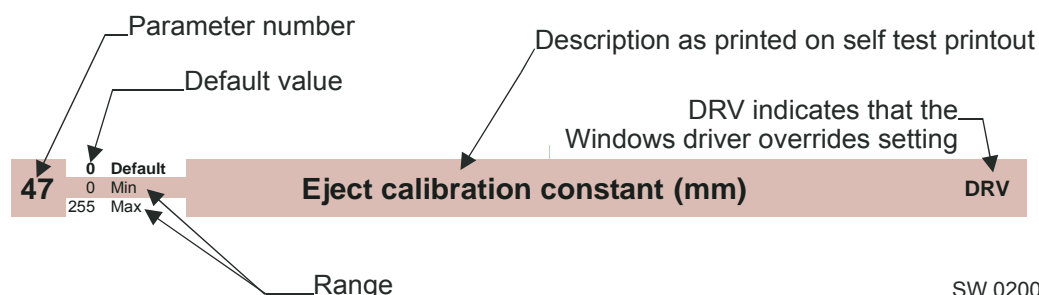
**Note** • If you try to set a parameter to an invalid value, the parameter will be set to the nearest valid value below.



Notes •



# Default Parameter Settings



SW 02001

## Default Value

The default values indicated are "factory default settings" you get by sending `<ESC>&F>`. These are not necessarily the settings that your printer was originally delivered with because many printers have customized settings when delivered.

## Examples

Command examples are formatted in Courier and typed in the same way as used in the Zebra Toolbox:

```
<ESC>&P<1><19>
```

Where `<ESC>` means the escape character 27 decimal (hex 1B). Numbers between less-than and greater-than characters, for example `<015>`, means 15 decimal (hex F).

## Summary Of Parameter Settings

Parameter	Description	ESC&F <010> Default	Page
1	Baud rate	96 (9600 Baud)	<a href="#">page 73</a>
2	Data bits	8	<a href="#">page 73</a>
3	Parity	0 (No parity)	<a href="#">page 73</a>
4	Flow control	2 (Hardware)	<a href="#">page 74</a>
5	Disable parallel port signaling	0 (No)	<a href="#">page 75</a>
7	Burn time	5	<a href="#">page 76</a>
8	Print speed	17 (75 mm/s)	<a href="#">page 76</a>
9	Presenter loop length	10 (32 cm)	<a href="#">page 76</a>
10	Pulse control	1 (1 burn pulse)	<a href="#">page 77</a>
12	Font attributes	0 (off)	
13	Line spacing	0 (Auto)	<a href="#">page 77</a>
14	Font selection	0 (TTP Mono 9)	<a href="#">page 77</a>
15 to 30	Tab stops	4, 8, 12 etc.	<a href="#">page 77</a>
33	CR/LF	0 (LF = CR/LF, CR=Ignored)	<a href="#">page 78</a>
34	Auto cut after FF	1 (Off)	<a href="#">page 78</a>
35	Black mark mode	0 (Off)	<a href="#">page 78</a>
36	Document mode	1 (Variable)	<a href="#">page 79</a>
37 & 38	Page length, Minimum / fixed / BM	2, 88 (75 mm)	<a href="#">page 79</a>
39	Max black mark length	80 (10 mm)	<a href="#">page 81</a>
40	Min black mark length	24 (3 mm)	<a href="#">page 81</a>
41 & 42	Black mark cut offset	0, 0 (0 mm)	<a href="#">page 81</a>
43 & 44	Top margin	0, 0 (Disabled)	<a href="#">page 81</a>
45	Presenter mode	0 (Eject)	<a href="#">page 82</a>
47	Eject calibration constant	40	<a href="#">page 82</a>
49	Advance before cut (Bottom margin)	1 (Auto)	<a href="#">page 83</a>
51	Black mark level	75	<a href="#">page 83</a>
52	Warning level	0 (Off)	<a href="#">page 83</a>
56	Max status code	255	



**Note** • When the printer is set up the way you like it to be, you send <ESC>&<4>, and all settings will be stored.



## Serial Interface Set-Up

1	96	Default	Baud Rate
	24	Min	
	11	Max	



**Note** • The new value is not valid until the parameters are stored and the printer restarted.

Sets the communication speed on the serial interface.

<ESC>&P<1><24>	2400 bps
<ESC>&P<1><48>	4800 bps
<ESC>&P<1><96>	9600 bps
<ESC>&P<1><19>	19200 bps
<ESC>&P<1><38>	38400 bps
<ESC>&P<1><57>	57600 bps
<ESC>&P<1><11>	115200 bps



**Note** • If you set an invalid value, the baud rate will return to the previous value.

2	8	Default	Data Bits <sup>1</sup>
	7	Min	
	8	Max	

Selects if 7-bit ASCII, or 8-bit, is used on the serial interface.

<ESC>&P<2><7>	7-bits (characters 0-127)
<ESC>&P<2><8>	8-bits (characters 0-255)

3	0	Default	Parity <sup>1</sup>
	0	Min	
	2	Max	

Select what parity to use on the serial interface.

<ESC>&P<3><0>	No parity
<ESC>&P<3><1>	Odd parity
<ESC>&P<3><2>	Even parity

4	2 Default 0 Min 2 Max	Flow-control <sup>1</sup>
---	-----------------------------	---------------------------

Select what handshaking to use on the serial interface.

<ESC>&P<4><0>	No flow control
<ESC>&P<4><1>	Xon / Xoff *
<ESC>&P<4><2>	Hardware

\*. DO NOT USE if you send any type of binary data like graphics data, status requests etc. Xon / Xoff only works when plain text is sent unidirectional to the printer. Graphics and status replies may well contain the Xon (11h) and Xoff (13h) characters and will obstruct the communication.

## Parallel Port Setup

5	0	Default	<b>Disable Parallel Port Signaling</b>
	0	Min	
	1	Max	

Pins 12 and 15 on the parallel port signals paper out and error. However, in an unattended kiosk you may not want this because it causes the host computer to stop communicating, and the operating system may display a banner on the kiosk screen.

By disabling the hardware signals, the kiosk software can for example use status commands to find out paper level and alert appropriate personnel when the level is low, then close the kiosk when paper is out.

<ESC>&P<5><0>	No, paper out and error signals are <i>not</i> disabled
<ESC>&P<5><1>	Yes, paper out and error signals are disabled



**Note** • When enabled, the hardware signal on pin 12 and 15 will block all communication until the error is corrected. This means that it will be impossible to ask for status.

Print Setup

7	5	Default	Burn Time	DRV
	1	Min		
	15	Max		



**Note** • DRV indicates that, when using Windows, the driver takes over this setting so please set appropriate value in the driver properties/document defaults.

A long burn time gives darker print. On insensitive paper types you may have to increase the burn time to get an acceptable print quality.

8	17	Default	Max Print Speed <sup>1</sup>	DRV
	1	Min		
	17	Max		

The main reason to decrease the print speed is to enhance print quality, and to reduce the peak current consumption.

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
mm/s	21	27	32	37	41	45	48	52	55	57	60	63	66	68	71	73	75



**Note** • Some settings result in printer chassis resonance causing excessive noise and deteriorated print quality. If this happens, increase the print speed.

9	15	Default	Presenter Loop Length
	3	Min	
	255	Max	

Limits the maximum loop length. When the set length is reached, the printer ejects part of the printout and continues too print. You use this when you have very limited space for the loop inside the kiosk. Each step represents a 3.2-cm increment.

Setting the parameter to 0 disables the looping and feeds the paper straight out.

<ESC>&P<9><0>	Disable the loop
<ESC>&P<9><7>	16 cm loop
<ESC>&P<9><15>	48 cm loop

<b>10</b>	1	Default	<b>Print Head Pulse Control</b>
	0	Min	
	3	Max	

Controls what the printer does with buffered data:

<ESC>&P<10><0>	1 burn pulse + history
<ESC>&P<10><1>	1 burn pulse
<ESC>&P<10><2>	2 burn pulses + history
<ESC>&P<10><3>	2 burn pulses

Adding history pulse enhances print quality. Dividing burning into two burn pulses reduces the peak current consumption.

<b>13</b>	0	Default	<b>Line Spacing</b>
	0	Min	
	30	Max	

The line spacing is normally set by the font height. With this parameter you can set a line spacing that is higher than the font height. Line spacing settings lower than the font height will be ignored.

<ESC>&P<13><30>	30 pixels or font height, whichever is the largest
-----------------	--

<b>14</b>	0	Default	<b>Font Selection</b>
	0	Min	
	7	Max	

Store which font number is used if no font is specified. Font is selected using [Font Selection on page 77](#) . Selecting an invalid font gives a software error status message (invalid index).

<b>15 to 30</b>	-	Default	<b>Tab Stop</b>
	1	Min	
	255	Max	

Stores 16 different TAB stop positions. The position is set in increments of 2.5-mm.

Tab position 255 sets a tab stop on the last position of the line. Use this if you want underline or reversed text to extend across the full paper width.

To set all tab stops at once, follow the procedure [Set several parameters at once on page 55](#) .

To move a single tab stop, use the set parameter command <ESC>&P.



**Example •** This example sets the first tab stop 25 mm from the left margin.

<ESC>&P<15><10>

Default positions are one TAB on each cm; that is parameter values 4, 8, 12 etc.

33	0	Default	CR/LF Behavior*
	0	Min	
	4	Max	

\*, v=0 is suitable for Windows, v=1 for UNIX, v=2 for DOS, and v=4 for Macintosh

Carriage Return and Line Feed can be interpreted in five different ways to suit different operating systems.

<ESC>&P<33><0>	LF = CR/LF	CR = Ignored
<ESC>&P<33><1>	LF = CR/LF	CR = CR
<ESC>&P<33><2>	LF = LF	CR = CR
<ESC>&P<33><3>	LF = LF	CR = CR/LF
<ESC>&P<33><4>	LF = Ignored	CR = CR/LF



**Note** • The character currently interpreted as LF converts text from the input buffer to pixels on the paper.

34	1	Default	Auto Cut After FF
	0	Min	
	2	Max	

Decides if the printer should cut after executing an FF command, or if it should just feed the form length.

<ESC>&P<34><0>	No cut
<ESC>&P<34><1>	Cut
<ESC>&P<34><2>	Forced cut at black mark (cuts directly when a black mark is detected). This works only if black mark mode is selected (n36=2).

35	0	Default	Black Mark Mode
	0	Min	
	1	Max	

When enabled, marks on the paper set the form length. Minimum one form length is always fed. If a black mark is found before that, the printer feeds to the next black mark, then cuts and ejects. This ensures that no small paper stripes are cut off and left in the printer. Note that this parameter is used when loading paper and when pressing the Feed button. So even if black mark is enabled in the Windows driver and works, parameters for black mark must be set up correctly.

<ESC>&P<35><0>	Normal
<ESC>&P<35><1>	Black mark synchronization enabled

36	1	Default	Document Mode	DRV
	0	Min		
	2	Max		

Determines what should control the page length:

<ESC>&P<36><0>	Fixed Document Mode. Shorter documents will automatically be extended, while longer documents will be divided into several pages of the desired length. Page length will be the length set by parameters 37 and 38
<ESC>&P<36><1>	Variable Document Mode. The length of the page varies with the contents (printouts shorter than the value specified by parameters 37 and 38 will be extended to that length)
<ESC>&P<36><2>	Black Mark Mode. Marks on the paper set the form length. Minimum one form length is always fed. If a black mark is found before that, the printer feeds to the next black mark, then cuts and ejects. This ensures that no small paper stripes are cut off and left in the printer.



**Note** • Max page length in Fixed Document Mode is A5-size, which is 148.5 mm.

37 & 38	2, 88	Default	Page Length	DRV
	2, 88	Min		
	255, 255	Max		

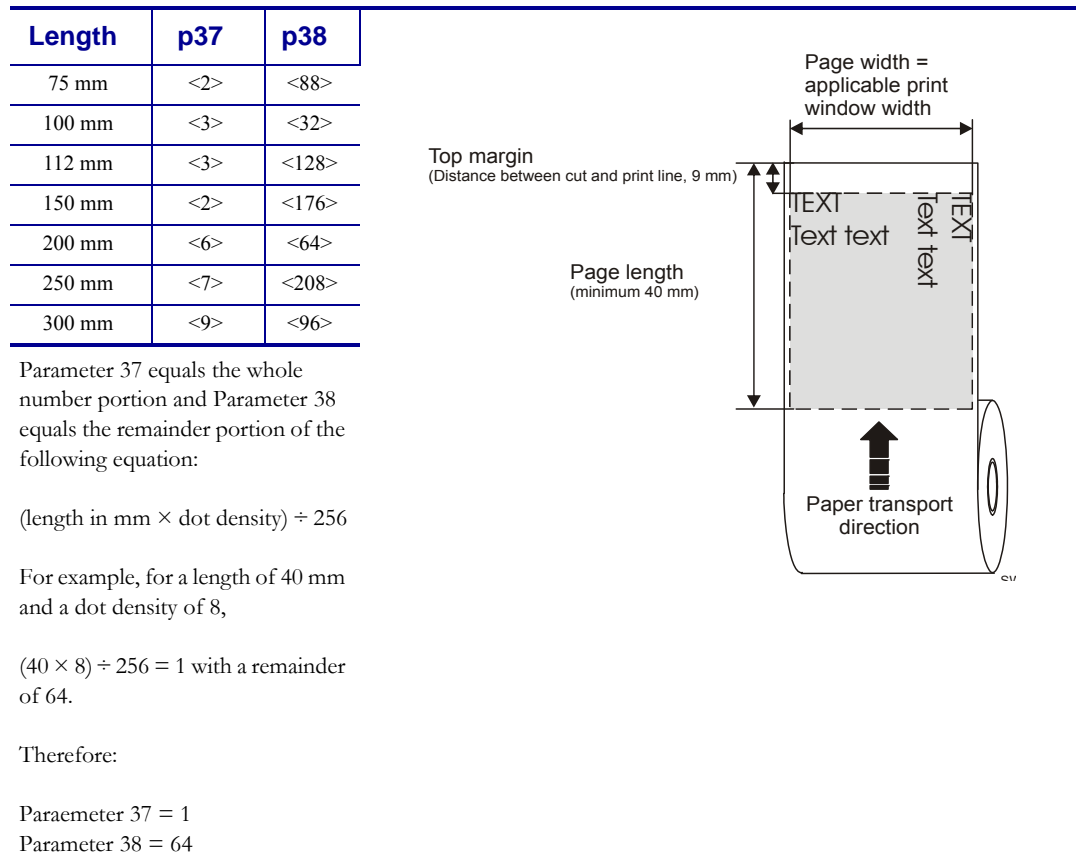
Defines three different things:

1. The minimum length of a page in variable document mode
2. The actual page length in fixed document mode
3. The distance between black marks in black mark mode

One step is 0.125 mm. Settings shorter than 75 mm, will be interpreted as 75 mm.

<ESC>&P<37><5><ESC>&P<38><205> Set page length to A5 (148.5 mm)

Figure 21 • Definition of page size



## Fixed Document Mode

Max *fixed document mode* page length is depends of the amount of free ram. Make a self-test printout to check how much is available in your printer. (Depends on firmware version).

$$\text{Page length} = \frac{\text{Free RAM in bytes} - 1024}{\text{Paper width}} - \text{top margin} - \text{bottom margin}$$

Paper length, top, and bottom margins are in pixel lines. Paper width is in bytes or mm. (1 byte = 1 mm.)



**Example** • If Free RAM on a TTP 70x0/112 is 114627 bytes, page width is 104 mm = 104 bytes, top margin is 20 mm, and bottom margin 10 mm (20 x 8 = 160 and 10 x 8 = 80 pixel lines):

$$\text{Page length} = \frac{114627 - 1024}{104} - 160 - 80 = 852 \text{ pixel lines} = 106 \text{ mm}$$

If a too large fixed page is specified the printout will be blank from memory full to the cut.



39	80	Default	<b>BM (Black Mark) Length</b>	DRV
	16	Min		
	160	Max		

Specifies the length of the black mark in 0.125-mm steps. Measure the length of the black mark on your paper and enter that value here.

Marks 5 mm longer than this value are interpreted as paper out. The default value of 80 equals 10 mm.

<ESC>&P<39><40>	Sets max black mark length to 5 mm.
-----------------	-------------------------------------

40	24	Default	<b>Min BM (Black Mark) Length “Mark Filter”</b>	DRV
	15	Min		
	159	Max		

This parameter specifies the minimum length of the black mark in 0.125 mm increments. Shorter marks are ignored. The default value of 24 equals 3 mm. This filters out pre-print or marks on the paper. If the mark is smaller than the value set for this parameter, it will not be regarded as a TOF black mark. A value equal to 1/3 the length of a TOF black mark is usually the most effective.

<ESC>&P<40><36>	Sets min black mark length to 4 mm.
-----------------	-------------------------------------

41 & 42	0, 0	Default	<b>BM (Black Mark) Cut Offset</b>	DRV
	0, 0	Min		
	255, 255	Max		

Defines the paper feed between the black mark detection and cut. One step is 0.125 mm.

<ESC>&P<41><1><ESC>&P<42><144>	Feeds 50 mm between black mark and cut.
--------------------------------	---

43 & 44	0, 0	Default	<b>Top Margin</b>	
	0, 0	Min		
	255, 255	Max		

Defines the distance between the top of the paper and the top of the first text line in 0.125 mm steps. The top margin feed is effectuated when the presenter is cleared from the previous page.

0 =	disabled top margin. This gives the physical top margin of the printer, which is 17 mm.
-----	---

Avoid settings 1 – 16 mm because then the printer must reverse the paper before starting to print, which may cause paper jam, especially at small roll diameters.

<ESC>&P<43><0><ESC>&P<44><240>	Add 30-mm top margin.
--------------------------------	-----------------------

45	<div>0 Default</div> <div>0 Min</div> <div>230 Max</div>	Presenter Mode	DRV
----	--	----------------	-----

Sets the function of the presenter. The Retract selections are only valid if a retract option is fitted.

<ESC>&P<45><0>	Eject page when new page is printed. (Retract disabled)
<ESC>&P<45><3>	Eject page when new page is printed. Page not taken after 30s will be retracted. (Range 1-30, 1 step = 10 s)
<ESC>&P<45><100>	Retract page when new page is printed
<ESC>&P<45><103>	Retract page when new page is printed. Page not taken after 30s will be retracted. (Range 101-130, 1 step = 10 s)
<ESC>&P<45><200>	Do nothing when new page is printed. (Auto-eject and retract disabled).
<ESC>&P<45><203>	Do nothing when new page is printed. Page not taken after 30s will be retracted. (Range 201-230, 1 step = 10 s)

47	<div>40 Default</div> <div>0 Min</div> <div>255 Max</div>	Eject Calibration Constant	DRV
----	---	----------------------------	-----

Sets the eject length of the printout, that is the length of paper that protrudes outside the printer after a cut command. This eject length should be 40-63 mm. Marks on the test printout show max and min eject length.

The default value when loading firmware is 40, but should be set individually from printer to printer. The set value is shown in a line on the test printout.

After sending the command, store the parameters, and wait until the presenter motor buzzes. Then make a self test printout to check if the set eject length is correct.



**Example •** This example sets parameter 47 to 50 and stores the parameters as default settings

```
<ESC>&P<47><50>
<ESC>&<4>
```

49	1	Default	<b>Advance Before Cut (Bottom Margin)</b>	DRV
	0	Min		
	1	Max		

Selects if the cut command cuts at the position where the paper is at, or if the printer should advance the paper before cutting.

<ESC>&P<49><0>	Off
<ESC>&P<49><1>	Automatic Distance Calculation

"Automatic Distance Calculation" means advancing the paper with the Head-To-Cutter distance (17 mm on the TTP 70x0).

Set to 1 if the printer is used in text mode and 0 if it is used from a driver that takes care of this in the driver.



**Note** • The paper is advanced before the FF command calculates the page length to see if the page length is longer than the set minimum length.

51	75	Default	<b>Black Mark Sensitivity</b>	DRV
	0	Min		
	255	Max		

This parameter is used by command ESC # to store the calibration of the black mark sensor. Normally there is no need to set this parameter manually.

0 is white and 255 is pitch black (out of paper).



**Note** • This parameter is not available on printers with hardware revision A of the control board. The revision is printed on the test printout.

52	0	Default	<b>Warning Level</b>	
	0	Min		
	255	Max		

Turns on/off indication of Paper near end and Weekend paper lever on the status indicator (1). This affects only the status indicator, not the status enquiries

<ESC>&P<52><0>	No indication
<ESC>&P<52><1>	Paper Near End indication
<ESC>&P<52><2>	Weekend level indication
<ESC>&P<52><3>	Paper near end and weekend indication



Notes • \_\_\_\_\_

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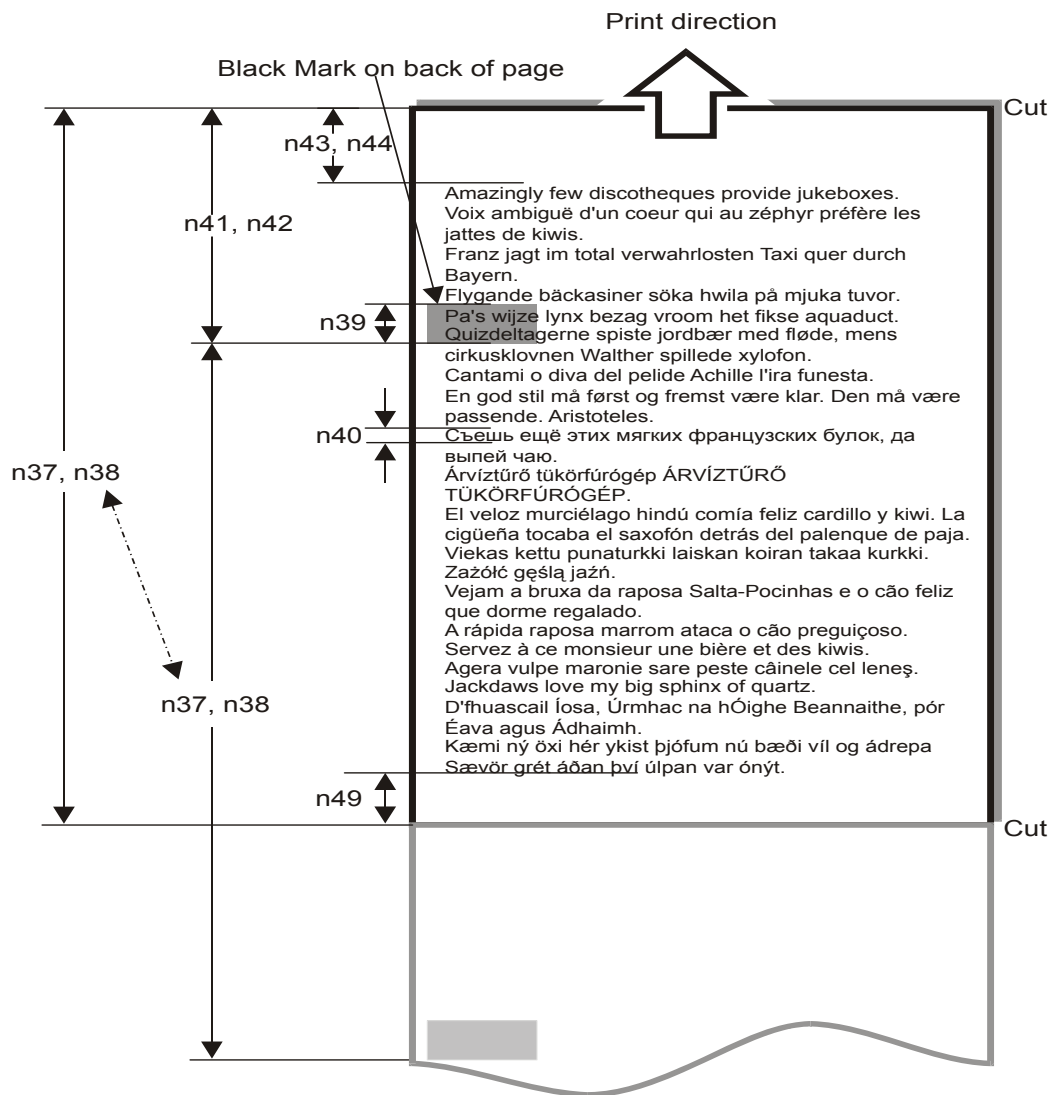
\_\_\_\_\_



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# Page Setup

## Printable Area



Top margin, bottom margin, page length, and synchronization with preprint are set up with parameters in the printer.



Since the same sensor is used for both paper end and black-mark detection, the printer must know the length of the black-mark to avoid signaling end-of-paper when it detects a black-mark. The default setting accepts black-marks in the range 3 –16 mm, and works perfectly with the recommended black-mark length of 5 mm. Marks shorter than 3 mm are interpreted as dirt, and marks longer than 16 mm as out-of-paper. Change both these values by changing the printer default settings.

Black mark mode is selected by setting parameter 35 to 1, and storing the parameters.



**Important •** It is essential that you store the parameters in the printer for black mark synchronization even if you enable black marks in the Windows driver. This is because Windows is not used at paper loading, and feeding with the Feed button on the printer.

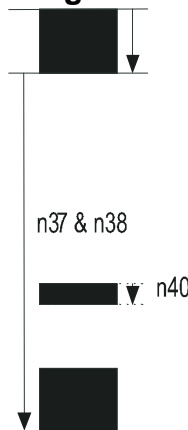


## Parameters Used

### Parameter n35 Black Mark

Enables/disables black mark check.

### Parameters n37 and n38 - Page Length Minimum



Measure the distance from the trailing edge of one black mark to the trailing edge of the next. The resolution is 0.125 mm so multiply the distance by 8, then calculate the value to enter as n37 and n38.



**Example** • If the page length is 100mm,  $(100 \times 8) / 256 = 3.125$ .

n37 is the integer value, that is 3, while  
n38 is the fraction,  $0.125 \times 256 = 32$

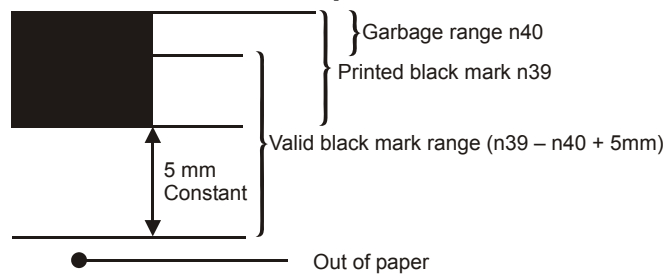
### Parameter n39 – Max Black Mark Length

Measure the height of the black mark. The resolution is 0.125 mm so multiply the black mark length (in millimeters) by 8 and enter the value as n39.

### Parameter n40 – Min Black Mark Length (Garbage Filter)

This parameter is actually a filter to filter-out garbage on the paper. If a spot is smaller than this value, it will not be regarded as a black mark. 1. About  $\frac{1}{3}$  of the black mark length is usually a suitable setting.

Garbage, Black Mark and Out of Paper Detection



For every step the paper is feed, the black mark sensor is sampled to detect garbage, black marks or out of paper.

When the printer detects blackness is has to check if it is only garbage;

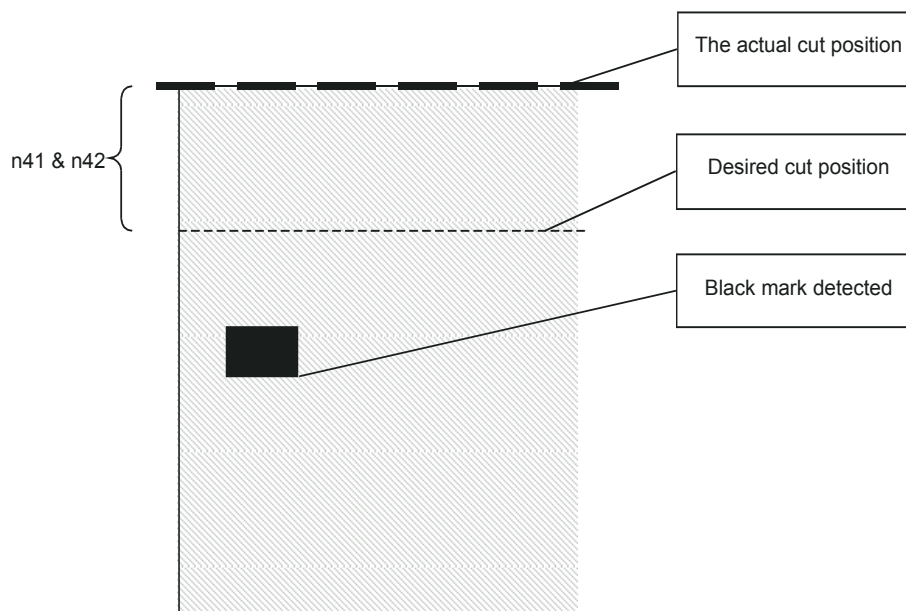
If...	Then...
the paper gets white again within $n40 \times 0.125 \text{ mm}$	it is garbage and the spot is ignored.
it is still black after $n40 \times 0.125 \text{ mm}$ Yes	it is probably a black mark.
the paper gets white within an additional $n39-n40$ plus 5 mm	it is a Blackmark

The 5-mm is a constant added to make sure that noise on the edge not will interfere with the samples. If it at this point still is still black we have detected out of paper.

Be careful about  $n40$  and  $n39$ . If  $n39 - n40$  is too small, then the minimum detection area will be too little. This area should not be less than 2 mm.

## Parameter n41 and n42 –Black Mark Cut Offset

After the black mark is detected (black to white change) the printer feeds another distance to place the paper in cut position. This distance cannot be negative so placing the black mark too close to the paper edge is better than too far away.



(ESC x n1 n2 is an obsolete command that sets n41 and n42. It is implemented for backward compatibility with old drivers. Set parameters n41 and n42 with the ESC & P n1 n2 command instead.)

## FF (Form Feed)

Use <FF> to print the buffer content, go to the next top of form (black mark), and cut the paper.

## ESC Z (Go To Next Top of Form)

Use <ESC>Z to move the paper to the next top of form. This is practically a Form-Feed without printing and cut. It searches for the next black mark for maximum one page length + black mark length  $(256 \times n37 + n38 + n39)/8$ . An additional length of 20 mm is added to be sure to pass the edge of the next black mark. If there is no black mark within the set distance plus 20 mm, an error is raised.



**Example •** The commands are used together in the following way:

The following examples are not made for a specific programming language or editor, but can be implemented with the tools of your choice. The data sent **to the printer** are marked with “Send→”.

When setting up the printer:

- Send→ <ESC>&P<35><1> Enables black mark sync
- Send→ <ESC>&P<37><4> Sets distance between two black marks  
Send→ <ESC>&P<38><0> n37=4d and n38=0d gives 128 mm
- Send→ <ESC>&P<39><80> Sets max Blackmark to 80 x 0.125 = 10mm
- Send→ <ESC>&P<40><24> Sets max Blackmark to 24 x 0.125 = 3 mm
- Send→ <ESC>&P<41><0>  
Send→ <ESC>&P<42><200> Sets Blackmark offset to 200 x 0.125 = 25mm
- Send→ <ESC>&P<43><0>  
Send→ <ESC>&P<44><0> Sets Blackmark top margin to 0mm
- Send→ <ESC>&<4> Stores the above parameters as default parameters.

The above sets up and stores the parameters in the flash prom of the printer, so this need only be sent once to the printer when setting it up for Blackmark sync.

Document

Send→	the text and graphics
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At the End Of the Document

Send→ <ESC>Z	Feeds the printout to the next black-mark + the additional feed specified by the ESC x command.
Send→ <RS>	Cuts and ejects the printout.

## Simple Calibration Process

1. Enable black mark mode by setting parameters n35 to n42 as described on the previous pages.
2. Load paper with black marks into the printer.
3. Send the <ESC># command and wait until the paper stops.
4. If the paper has returned to its original position, the calibration is finished.
5. If not, it was not possible to distinguish the black mark. Check the n37 and n38 settings and try again).
6. Save the settings with <ESC>&<4>.

## **Black-Mark Sensing from Within Windows**

Please refer to the Kiosk Driver Reference Guide, Part Number P1006873-100, available on [www.zebra.com](http://www.zebra.com) for detailed information on Black-Mark sensing.



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# Interface

The printer has one standard USB interface and an optional serial interface. There are no selections to be made, but only one interface can be used at a time. The printer will not function properly if data is received on more than one interface at a time.



**Note** • If you use the printer through a Windows driver, you need not read the rest of this chapter.



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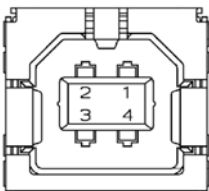
**Caution** • Always use Zebra-approved interface cables to avoid excessive EMC interferences and potentially voiding the printer EMC certifications.

---

## USB Interface

The USB (Universal Serial Bus) is an interface designed to handle peripherals daisy chained to a single connector. The transfer speed is up to 12 Mbits/s, which is quite adequate for the printer. Use this interface in operating systems with USB support, for instance Windows XP. USB devices are Plug and Play compatible and hot swappable, which means that they can be connected and disconnected without turning off the power, or rebooting the computer.

Table 4 • USB Connector (J13) Pin Assignment

	Contact Number	Signal Name	Comment
	1	VCC	Cable power
	2	– Data	
	3	+ Data	
	4	Ground	Cable ground



## Serial Option, TTP 7030

The printer has a 10-pin connector on the control board. This connector can be used to connect to an external RS-232 adapter. See [Connecting To The Computer on page 16](#) for installation instructions.

The transfer speed of the serial interface can be set to between 2 400 and 115 200 bits/s.

This low transfer speed limits the printing speed. Printing full-width graphics with 115 200 bits/s result in printing speeds of about 24 mm/s for the 80-mm version of the printer, and 16 mm/s for the 112-mm version.

Applications where text-only printouts are to be printed are suitable for serial interface because of its easy to use bi-directional capability.

**Table 5 • Serial Connector Pin Assignment**

Printer	2 (RXD)	3 (TXD)	4 (DTR)	5 (GND)	6 (DSR)	7 (RTS)	8 (CTS)
PC (9 pole D-sub)	3 (TXD)	2 (RXD)	6 (DSR)	5 (GND)	4 (DTR)	8 (CTS)	7 (RTS)

## Setup Options

<b>Baud</b>	2 400, 4 800, 9 600, 19 200, 38 400, 57 600, 115 200 bits/s
<b>Flow control</b>	None, Xon / Xoff, or Hardware
<b>Data bits</b>	7/8
<b>Stop bits</b>	1 (fixed)
<b>Parity</b>	None, Odd, or Even
<b>Default settings:</b>	9600 bits/s, 8-bits, No parity, 1 stop bit, and hardware flow control.

See also: [Default Parameter Settings on page 69](#).



Notes •



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# Maintenance

## Fault Finding

In connection with service of the printer it is good practice to remove paper dust and lint from the paper path, cutter and sensor areas. Paper dust, when accumulated, may interfere with printer functions such as optical sensors.

To avoid smudging the paper, do not apply oil on the cutting knife.

**Table 6 • Fault Finding**

Symptom	Suggest Actions
Nothing is printed when you press the feed-forward button in self-test mode, but the document is transported, cut and ejected.	<ul style="list-style-type: none"> <li>• Check that the paper roll is turned the correct way with thermal sensitive layer facing up.</li> <li>• Check that the paper used meets the paper specification. See <a href="#">Paper Specification on page 112</a>.</li> <li>• Check that the print head ribbon cable is fully inserted into the connectors at each end.</li> </ul>
Paper jam	<ul style="list-style-type: none"> <li>• Check cutter-home switch.</li> </ul>
Printer does not work at all	<ul style="list-style-type: none"> <li>• Check that the paper release lever is lowered (print head presses against the paper).</li> <li>• Check that power is supplied to the printer.</li> <li>• Check the function of the paper-out sensor.</li> </ul>
Self-test prints OK, but the printer works strangely in normal operation.	<ul style="list-style-type: none"> <li>• Check that both ends of the interface cable are properly connected.</li> <li>• Application program might be incorrect. Contact system manager.</li> <li>• If using the serial interface, ensure that all communications parameters match the PC's serial port configuration</li> </ul>
No cutting	<ul style="list-style-type: none"> <li>• Check that the connectors for the cutting motor/home-position switch are fully seated on the control board.</li> </ul>
Bad cutting (uneven top and bottom document edges).	<ul style="list-style-type: none"> <li>• Switch OFF printer and remove any obstructing paper particles in cutter and presenter modules.</li> </ul>
Inconsistent cutter operation	<ul style="list-style-type: none"> <li>• Check cutter-home switch.</li> </ul>
Paper is fed straight through the printer. Paper does not loop.	<ul style="list-style-type: none"> <li>• Check presenter sensor.</li> <li>• Check setting of parameter p9.</li> </ul>
Missing print or irregular spots.	<ul style="list-style-type: none"> <li>• Paper may be too humid. Let it adapt to ambient temperature and humidity for approximately 24 hours before use.</li> <li>• The paper used might not meet the paper specification. See <a href="#">Paper Specification on page 112</a>.</li> </ul>
White longitudinal lines in the printout.	<ul style="list-style-type: none"> <li>• Faulty print head, replace print module.</li> </ul>

Table 6 • Fault Finding (Continued)

Sympton	Suggest Actions
Faint print.	<ul style="list-style-type: none"><li>• The paper used might not meet the paper specification. See <a href="#">Paper Specification on page 112</a>.</li><li>• Clean print head with ethyl or isopropyl alcohol.</li><li>• Adjust print contrast, see <a href="#">Print Setup on page 76</a>.</li></ul>
Strange characters or graphics printed, or any kind of strange printer behavior.	<ul style="list-style-type: none"><li>• Might be caused by erroneous data sent from the host. Check validity of transferred data.</li><li>• If using the serial interface, ensure that all communications parameters match the PC's serial port configuration.</li></ul>

## Cleaning The Print Head



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**Caution** • Disconnect the printer from the power source before performing the following procedure.

---

The print head can be cleaned without removal.

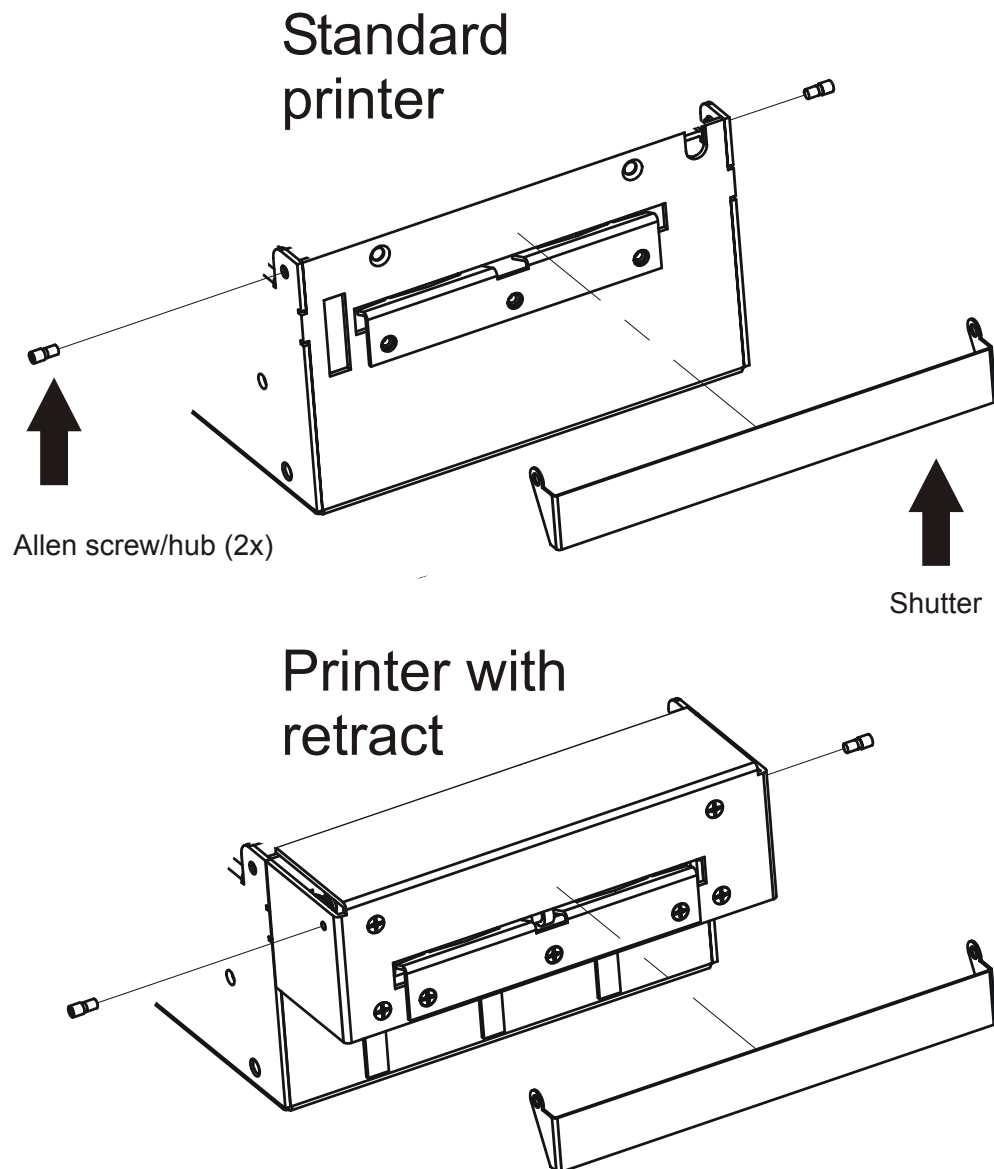
1. Remove the power from the printer and allow the print head to cool.
2. Tilt the print module backwards.
3. Lift the print head with the print head release lever.
4. Clean the heat elements with a cotton swab immersed in ethyl or isopropyl alcohol.



**Note** • Zebra recommends using a clean swab dipped in a solution of isopropyl alcohol (minimum 90%) and deionized water (maximum 10%) to clean the print head.

## Fitting A Shutter

Figure 23 • Fitting a Shutter



The shutter kit contains a shutter and two hub-screws. In addition to this, you need an 1.5 mm Allen-key.

1. Fit one hub screw.
2. Hook the shutter onto the screw and insert the other screw, through the hole in the shutter and into the thread in the printer.
3. Make sure the head of the screw goes into the hole of the shutter and then tighten it.
4. Verify that the shutter opens/closes as it should by printing a couple of documents.

## Firmware

The firmware is stored in flash-PROM on the control board. A replacement control board may not contain the same firmware version that you are currently using, so if you replace the control board for some reason, upgrade it to the firmware version you want to use.

Please visit our web site <http://www.zebra.com> for the most current firmware versions.

## Loading



**Note** • We recommend you to design your kiosk system so that remote upgrade of firmware is possible. If you need to upgrade firmware in the future, the kiosks can be spread over a vast area and upgrade can become very expensive.

Download the most current firmware version from the Zebra web site <http://www.zebra.com>. There you will also find the Toolbox utility program (Windows™ software) facilitating the loading of the firmware into the printer.

Are you using a Windows environment to load the firmware?

If...	Then...
No	<ol style="list-style-type: none"> <li>Send &lt;ESC&gt;&lt;NUL&gt; (1BH 00H) to the printer.</li> <li>Wait 0.5 seconds.</li> <li>Send the firmware file to the printer.</li> <li>Wait until the printer buzzes to confirm that the loading is complete (the presenter motor runs for a second).</li> </ol>
Yes	The loader program contains a help file with detailed instructions on how to load the firmware into the printer.



**Important** • The loading and burning can take up to one minute. Do not abort before one minute by turning OFF the power to the printer. Doing so may leave the printer in a state where new firmware cannot be loaded. If this occurs, please return the printer to a Zebra authorized service provider.

Functions and features are being added from time to time, affecting the firmware in the printer. The following table lists the changes of general interest. The firmware number is divided into two sections, the header and the version, separated by a dash.

Printer	Barcode support	Firmware header
TTP 7030	1D barcodes	1856-xxx
TTP 7030	2D PDF-417	1860-xxx

A printer can only be updated with firmware that has the same header as the original number. The -xxx indicates the firmware version; for example, 330 means firmware version 3.30.



**Note** • Specification subject to changes without notice.



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## Specifications



## Print Data

Printer control	Windows 98/ME/2000/XP Drivers
Direct addressing through ESC sequences	
Plug and Play	Yes
Print method	Direct thermal line printing
Resolution	8 dots/mm (203 dpi)
Feed pitch	1/8 mm (203 lpi)
Print speed	Up to 75 mm/s
Print width	
80-mm version	72 mm, 576 dots
112-mm version	104 mm, 832 dots
Interfaces	USB Optional external RS-232 serial interface adapter is available.
Serial interface settings	<i>Baud:</i> 2 400, 4 800, 9 600, 19 200, 38 400, 57 600, 115 200 bits/s
<i>Data bits:</i>	7 or 8
<i>Parity:</i>	None, Odd or Even
<i>Stop bits:</i>	1 ( <i>fixed</i> )
Flow control:	None, Xon / Xoff, or Hardware
Default settings:	9600 bits/s, 8 data bits ,no parity, 1 stop bit, <i>no flow control</i> .

## Command Code Modes (Non-Windows Applications)

Orientation	Horizontal (Portrait Mode) and Vertical (Landscape Mode)
Number of possible fonts:	8
Font memory	Free memory depends on firmware version, see self-test printout
Font technology	Bitmap fonts, non scaleable
Standard fonts	TTP Mono 9, Arial 9, Symbol 9, Wingdings 10, and Code 39
Text attributes	Bold, underline, reverse print, multiple-width, multiple height. Attributes can be combined on the same text line.
Logotypes	16 logotypes can be stored in flash memory
Logotype memory	Free memory depends on firmware version, see self-test printout

## Basic Character Set

The default fonts use Windows code page 1252 Western which contains ISO 8859-1 (ANSI) characters. You can use other character sets by creating and loading appropriate font files.

Characters 0 to 31 are control codes that cannot be changed, but 32 to 255 can be custom designed.

The table below shows the characters stored in flash PROM on the printer control board.

Table 7 • Code Page 1252 Character Table

Dec Hex Key	32 20	33 21 !	34 22 "	35 23 #	36 24 \$	37 25 %	38 26 &	39 27 '	40 28 (	41 29 )	42 2a *	43 2b +	44 2c ,	45 2d -	46 2e .	47 2f /
Dec Hex Key	48 30 0	49 31 1	50 32 2	51 33 3	52 34 4	53 35 5	54 36 6	55 37 7	56 38 8	57 39 9	58 3a :	59 3b ;	60 3c <	61 3d =	62 3e >	63 3f ?
Dec Hex Key	64 40 @	65 41 A	66 42 B	67 43 C	68 44 D	69 45 E	70 46 F	71 47 G	72 48 H	73 49 I	74 4a J	75 4b K	76 4c L	77 4d M	78 4e N	79 4f O
Dec Hex Key	80 50 P	81 51 Q	82 52 R	83 53 S	84 54 T	85 55 U	86 56 V	87 57 W	88 58 X	89 59 Y	90 5a Z	91 5b [	92 5c \	93 5d ]	94 5e ^	95 5f _
Dec Hex Key	96 60 ,	97 61 a	98 62 b	99 63 c	100 64 d	101 65 e	102 66 f	103 67 g	104 68 h	105 69 i	106 6a j	107 6b k	108 6c l	109 6d m	110 6e n	111 6f o
Dec Hex Key	112 70 p	113 71 q	114 72 r	115 73 s	116 74 t	117 75 u	118 76 v	119 77 w	120 78 x	121 79 y	122 7a z	123 7b {	124 7c 	125 7d }	126 7e ~	127 7f A0127
Dec Hex Key	128 80 A0128	129 81 A0129	130 82 A0130	131 83 A0131	132 84 A0132	133 85 A0133	134 86 A0134	135 87 A0135	136 88 A0136	137 89 A0137	138 8a A0138	139 8b A0139	140 8c A0140	141 8d A0141	142 8e A0142	143 8f A0143
Dec Hex Key	144 90 A0144	145 91 A0145	146 92 A0146	147 93 A0147	148 94 A0148	149 95 A0149	150 96 A0150	151 97 A0151	152 98 A0152	153 99 A0153	154 9a A0154	155 9b A0155	156 9c A0156	157 9d A0157	158 9e A0158	159 9f A0159
Dec Hex Key	160 a0 A0160	161 a1 A0161	162 a2 A0162	163 a3 A0163	164 a4 A0164	165 a5 A0165	166 a6 A0166	167 a7 A0167	168 a8 A0168	169 a9 A0169	170 aa A0170	171 ab A0171	172 ac A0172	173 ad A0173	174 ae A0174	175 af A0175
Dec Hex Key	176 b0 A0176	177 b1 A0177	178 b2 A0178	179 b3 A0179	180 b4 A0180	181 b5 A0181	182 b6 A0182	183 b7 A0183	184 b8 A0184	185 b9 A0185	186 ba A0186	187 bb A0187	188 bc A0188	189 bd A0189	190 be A0190	191 bf A0191
Dec Hex Key	192 c0 A0192	193 c1 A0193	194 c2 A0194	195 c3 A0195	196 c4 A0196	197 c5 A0197	198 c6 A0198	199 c7 A0199	200 c8 A0200	201 c9 A0201	202 ca A0202	203 cb A0203	204 cc A0204	205 cd A0205	206 ce A0206	207 cf A0207
Dec Hex Key	208 d0 A0208	209 d1 A0209	210 d2 A0210	211 d3 A0211	212 d4 A0212	213 d5 A0213	214 d6 A0214	215 d7 A0215	216 d8 A0216	217 d9 A0217	218 da A0218	219 db A0219	220 dc A0220	221 dd A0221	222 de A0222	223 df A0223
Dec Hex Key	224 e0 A0224	225 e1 A0225	226 e2 A0226	227 e3 A0227	228 e4 A0228	229 e5 A0229	230 e6 A0230	231 e7 A0231	232 e8 A0232	233 e9 A0233	234 ea A0234	235 eb A0235	236 ec A0236	237 ed A0237	238 ee A0238	239 ef A0239
Dec Hex Key	240 f0 A0240	241 f1 A0241	242 f2 A0242	243 f3 A0243	244 f4 A0244	245 f5 A0245	246 f6 A0246	247 f7 A0247	248 f8 A0248	249 f9 A0249	250 fa A0250	251 fb A0251	252 fc A0252	253 fd A0253	254 fe A0254	255 ff A0255
		ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Table 8 • Symbol Character Table

Dec Hex Key	32 20	33 21 !	34 22 "	35 23 #	36 24 \$	37 25 %	38 26 &	39 27 '	40 28 (	41 29 )	42 2a *	43 2b +	44 2c ,	45 2d -	46 2e .	47 2f /
Dec Hex Key	48 30 0	49 31 1	50 32 2	51 33 3	52 34 4	53 35 5	54 36 6	55 37 7	56 38 8	57 39 9	58 3a :	59 3b ;	60 3c <	61 3d =	62 3e >	63 3f ?
Dec Hex Key	64 40 @	65 41 A	66 42 B	67 43 C	68 44 D	69 45 E	70 46 F	71 47 G	72 48 H	73 49 I	74 4a J	75 4b K	76 4c L	77 4d M	78 4e N	79 4f O
Dec Hex Key	80 50 P	81 51 Q	82 52 R	83 53 S	84 54 T	85 55 U	86 56 V	87 57 W	88 58 X	89 59 Y	90 5a Z	91 5b [	92 5c \	93 5d ]	94 5e ^	95 5f _
Dec Hex Key	96 60 ,	97 61 a	98 62 b	99 63 c	100 64 d	101 65 e	102 66 f	103 67 g	104 68 h	105 69 i	106 6a j	107 6b k	108 6c l	109 6d m	110 6e n	111 6f o
Dec Hex Key	112 70 p	113 71 q	114 72 r	115 73 s	116 74 t	117 75 u	118 76 v	119 77 w	120 78 x	121 79 y	122 7a z	123 7b {	124 7c 	125 7d }	126 7e ~	127 7f A0127
Dec Hex Key	128 80 A0128	129 81 A0129	130 82 A0130	131 83 A0131	132 84 A0132	133 85 A0133	134 86 A0134	135 87 A0135	136 88 A0136	137 89 A0137	138 8a A0138	139 8b A0139	140 8c A0140	141 8d A0141	142 8e A0142	143 8f A0143
Dec Hex Key	144 90 A0144	145 91 A0145	146 92 A0146	147 93 A0147	148 94 A0148	149 95 A0149	150 96 A0150	151 97 A0151	152 98 A0152	153 99 A0153	154 9a A0154	155 9b A0155	156 9c A0156	157 9d A0157	158 9e A0158	159 9f A0159
Dec Hex Key	160 a0 A0160	161 a1 A0161	162 a2 A0162	163 a3 A0163	164 a4 A0164	165 a5 A0165	166 a6 A0166	167 a7 A0167	168 a8 A0168	169 a9 A0169	170 aa A0170	171 ab A0171	172 ac A0172	173 ad A0173	174 ae A0174	175 af A0175
Dec Hex Key	176 b0 A0176	177 b1 A0177	178 b2 A0178	179 b3 A0179	180 b4 A0180	181 b5 A0181	182 b6 A0182	183 b7 A0183	184 b8 A0184	185 b9 A0185	186 ba A0186	187 bb A0187	188 bc A0188	189 bd A0189	190 be A0190	191 bf A0191
Dec Hex Key	192 c0 A0192	193 c1 A0193	194 c2 A0194	195 c3 A0195	196 c4 A0196	197 c5 A0197	198 c6 A0198	199 c7 A0199	200 c8 A0200	201 c9 A0201	202 ca A0202	203 cb A0203	204 cc A0204	205 cd A0205	206 ce A0206	207 cf A0207
Dec Hex Key	208 d0 A0208	209 d1 A0209	210 d2 A0210	211 d3 A0211	212 d4 A0212	213 d5 A0213	214 d6 A0214	215 d7 A0215	216 d8 A0216	217 d9 A0217	218 da A0218	219 db A0219	220 dc A0220	221 dd A0221	222 de A0222	223 df A0223
Dec Hex Key	224 e0 A0224	225 e1 A0225	226 e2 A0226	227 e3 A0227	228 e4 A0228	229 e5 A0229	230 e6 A0230	231 e7 A0231	232 e8 A0232	233 e9 A0233	234 ea A0234	235 eb A0235	236 ec A0236	237 ed A0237	238 ee A0238	239 ef A0239
Dec Hex Key	240 f0 A0240	241 f1 A0241	242 f2 A0242	243 f3 A0243	244 f4 A0244	245 f5 A0245	246 f6 A0246	247 f7 A0247	248 f8 A0248	249 f9 A0249	250 fa A0250	251 fb A0251	252 fc A0252	253 fd A0253	254 fe A0254	255 ff A0255

## Bar Codes (Non-Windows Applications)

Orientation	Horizontal and vertical
Symbology	EAN, UPC, Interleaved 2-of-5, ISBN, Code39, and Code 128
Add-on	2, or 5 digit add-on can be added to EAN, UPC codes 5 digit add-on can be added to ISBN

## Paper Handling

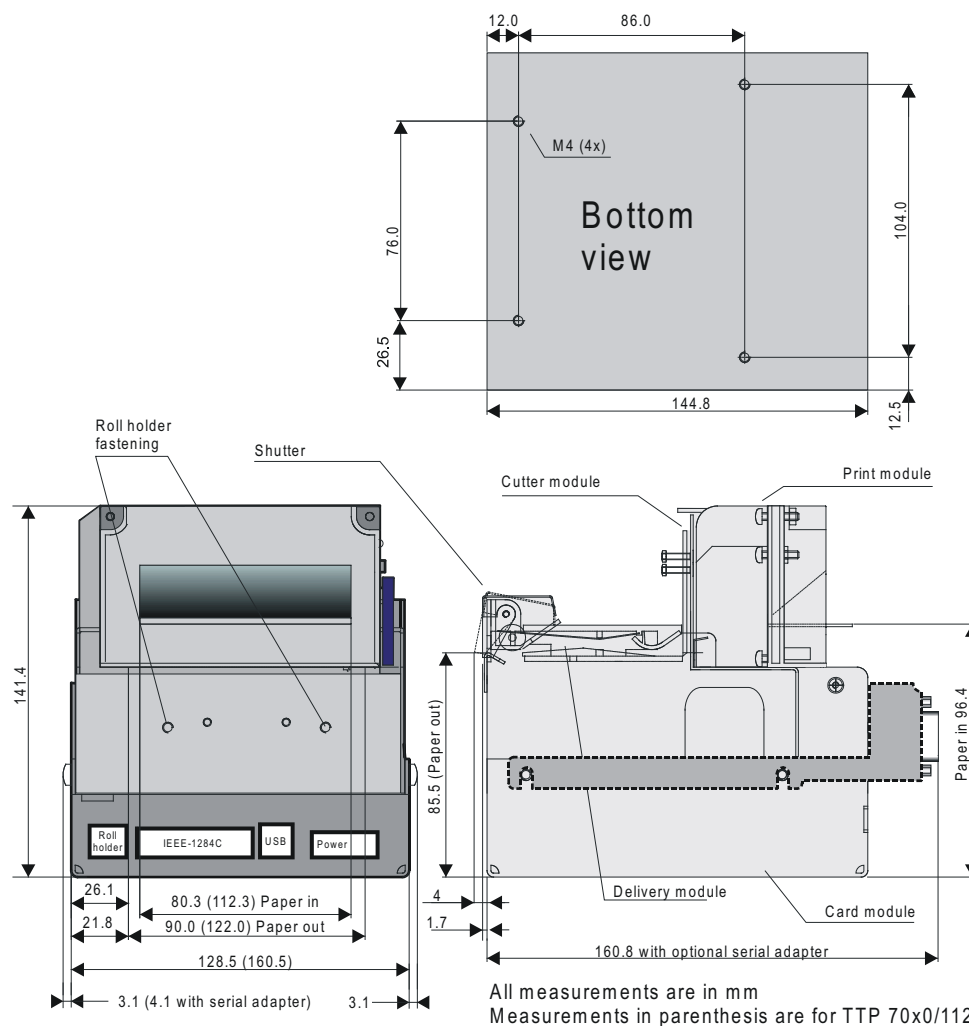
Paper width	80 mm or 112 mm depending on model
Printout length	75–500 mm before partially ejecting printout. No upper limit for printout length. (112-500mm for Retract-and-retain versions of the printer)
Cutting	Guillotine cutter
Presenter operation	Stores the printout until it is fully printed and cut, then presents part of the printout to the customer. When the customer pulls the ticket, a sensor reacts on the pull and feeds out the full printout. Extremely long printouts can be partially ejected to limit loop buildup.
Eject length after cut	Programmable eject length. Full eject, or printout held until the customer removes it. Eject of uncollected printouts.
Printout retraction	Optional retract and retain function pulls back uncollected printouts and throws them in a wastebasket inside the kiosk.
Paper loading	Automatic feed, cut, and eject when paper is detected. Automatic "on-line" after successful paper load. Automatic synchronization to Top-of-form marks when black-mark mode is selected in the parameter setup.
Sensors	Optical sensors: Out of paper, paper left in presenter, paper pulled, paper near end (optional) and weekend level sensor (optional). Switch sensors: Cutter not in home position and print head lifted.

## Printer Dimensions



**Note** • Additional space is required for paper roll and handling.

**Figure 24 • Measurements Drawing**



SW98050

## Environmental Conditions

Temperature	Operating: 0 to +50 °C Storage and transportation: -20 to +60 °C
Relative humidity	Operating: 35 to 75%, non-condensing Storage and transportation: 10 to 90%, non-condensing

## Miscellaneous

Weight	2.4 kg (80 mm), 2.85 kg (112 mm)
Typical throughput	1.5 s/printout (length 75 mm, print, cut, and present)
Power requirements	80 mm version: 24Vdc $\pm$ 10%, idle 150 mA, average 2.5A, peak 8.5A
	112 mm version: 24Vdc $\pm$ 10%, idle 150 mA, average 3.5A, peak 11A

## Paper Specification

### General

Paper supply	Roll paper with heat sensitive coating (thermal paper)
Type of paper	Paper types are available on <a href="http://zebra.com">zebra.com</a>
Number of layers	One
Paper weight	55—110 g/m <sup>2</sup>
Paper thickness	0.054—0.10 mm
Surface smoothness	450-s minimum according to Bekk TAPPI T 479
Reflection	80% minimum according to SCAN P3
Core	Paper or plastic
Core inner diameter	Minimum 25 mm
Paper end	Must not be glued to the core
Paper width	80 +0/–0.3 mm, or 112 +0/–0.3 mm depending on model
Paper length	Approx. 150 m (with 110-mm roll diameter and 65 g/m <sup>2</sup> ) Approx. 250 m (with 150-mm roll diameter and 65 g/m <sup>2</sup> ) Approx. 450 m (with 200-mm roll diameter and 65 g/m <sup>2</sup> )

### Thermal coating

Thermal coating	Outer side
Sensitivity	Activated at approx. 68 °C saturated at approx. 75 °C.
Dynamic sensitivity	1.14 $\pm$ 0.04 OD
Top coating	Standard, semi or UV (if applicable)



## Perforation

Tear-off perforation	Punching must be done from outer side (thermal coating side) with a sharp perforation tool.
----------------------	---

## Preprinting

General	<p>To endure the heat developed during printing, the preprint must meet the requirements applicable for preprinting on paper intended for laser printing. OCR-blind ink must be used for preprint on the inner side of the roll.</p> <p>Ink used for preprinting on the thermal side must be non-abrasive.</p> <p>The ink must not smear while wound up on the supply roll or during the printing process.</p>
Print side	One side or both sides.

## Black Mark Size and Position

See also [Page Setup](#) on page 85.

Print side	Inner side (opposite to thermal coating side)
Sensor position	25 mm before cutter, and 9.1 mm from left edge of ticket entry when seen from the front of the printer (on the side of the blue release arm).
Mark length range	3 to 18 mm, default 5 mm
Mark width	Minimum 5 mm centered on the sensor position, recommended width is 9 mm
Print density	<p>Standard wet offset mode is recommended for printing of the black-marks. The full mark area must be printed. Screen-printing is not allowed. Measurement of print density must be performed relative to the white paper background.</p> <p>Using a MacBeth densitometer, the print density must be greater than 1.3. Anti-gloss filter is not allowed. Using a Gretag densitometer, the print density must be greater than 1.5. The reflection from the black-mark must be less than 10%. The reflection from the paper must exceed 80%.</p>
Preprinting	Preprinting in the zone passing over the black-mark sensor is not recommended. If required, OCR blind type of ink must be used, (outside the 700-1100 nm range).
Punched holes	Punching must be done from the thermally coated side. Distorted print can be expected within a zone of approximately 2-mm around the edges of the hole. The function must be tested.

## Part Number List

### Printers

Part Description	NA/LA/AP	EMEA
TTP 7030, 80 mm	01768-080	01768-080
TTP 7030, 112 mm	01768-112	01768-112
TTP 7030, 80 mm, with retract	01868-080	01868-080
TTP 7030, 112 mm, with retract	01868-112	01868-112
TTP 7030, 112mm Evaluation Kit	N/A	01799-112

### Accessories

Part Description	NA/LA/AP	EMEA
USB cable 1.8 m (6ft.)	105850-028	105850-028
RS232 serial cable	10825-000	10825-000
Serial Interface Adapter with adapter plate	01437-000	01437-000
Serial Adapter Cable	SE0910D	N/A
80 mm Roll Holder behind with paper low sensor, 150 mm dia max	01123-080	01123-080
80 mm Roll Holder below with paper low and weekend sensors, 250 mm dia max	01754-080	01754-080
112 mm Roll Holder behind with paper low sensor, 150 mm dia max	01123-112	01123-112
112 mm Roll Holder below with paper low and weekend sensors, 250 mm dia max	01754-112	01754-112
Paper Low and Weekend Sensors with 400 mm cable	01579-400	01579-400
Paper roll 80 mm	10007008	01942-080Z
Paper roll 112 mm	10007009	01942-112Z
Power supply 24V, 70W (for general printing)	01776-000	01776-000
Power supply 24V, 150W with on/off switch (for printing large graphics)	S-150-24SW	01035-014
Power supply to printer cable, 600mm *	01370-000	01370-000
AC Power Cable	300020-001 (US)	46629 (EU) 46637T (UK)

\* Requires installation by a qualified engineer.

Figure 25 • 70W Power Supply

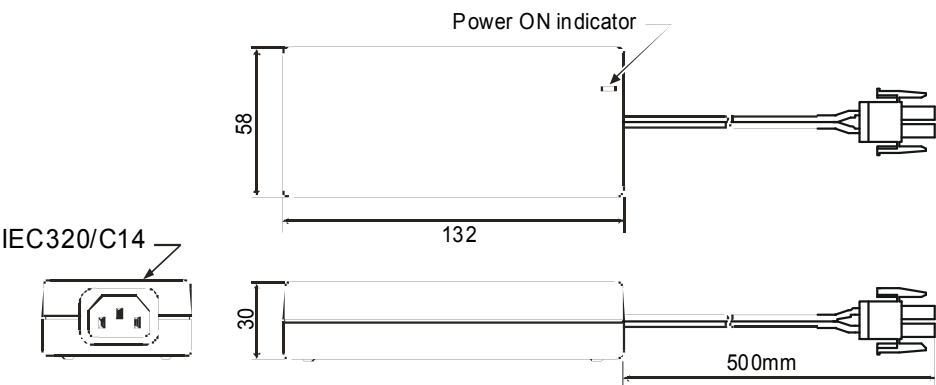


Figure 26 • 150W Power Supply

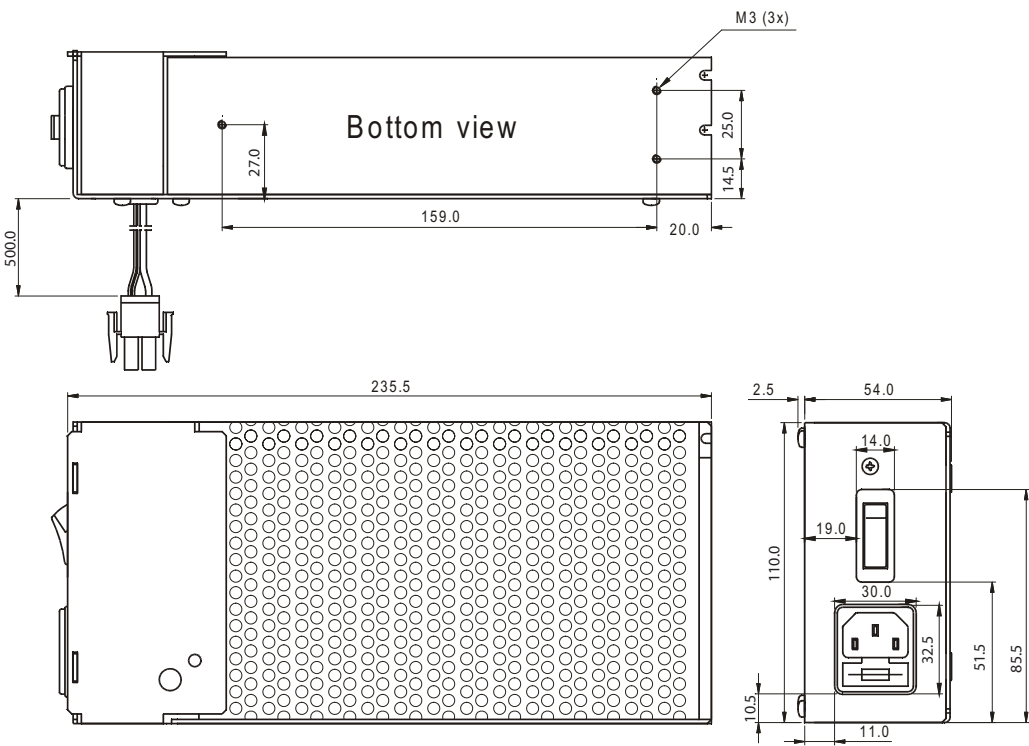
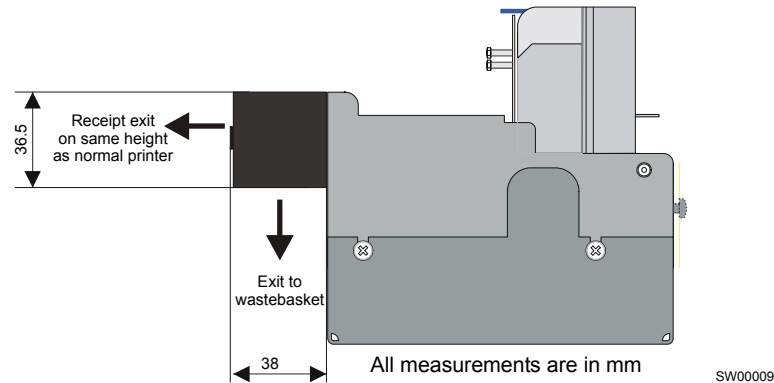


Figure 27 • Retract and Retain Version



Choose between four modes in the default parameter setup:

1. Retract when new printout is printed.
2. Retract after a preset time.
3. Eject to customer when new printout is printed (wastebasket off).
4. Eject to customer when new printout is printed, but retract if not collected within a preset time.

No additional commands are required.

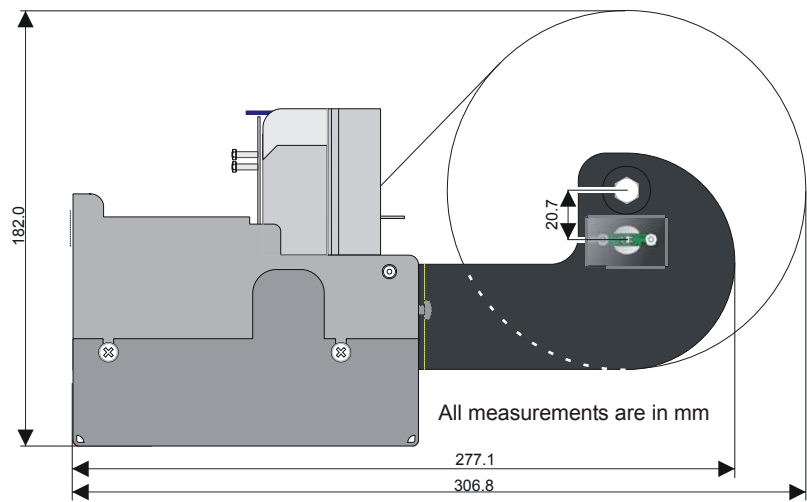


**Note** • Use paper rolls with an inner diameter of 40 mm or more when using the "retract and retain" option to prevent the curl in the paper causing a jam in the retract function.

Roll Holders

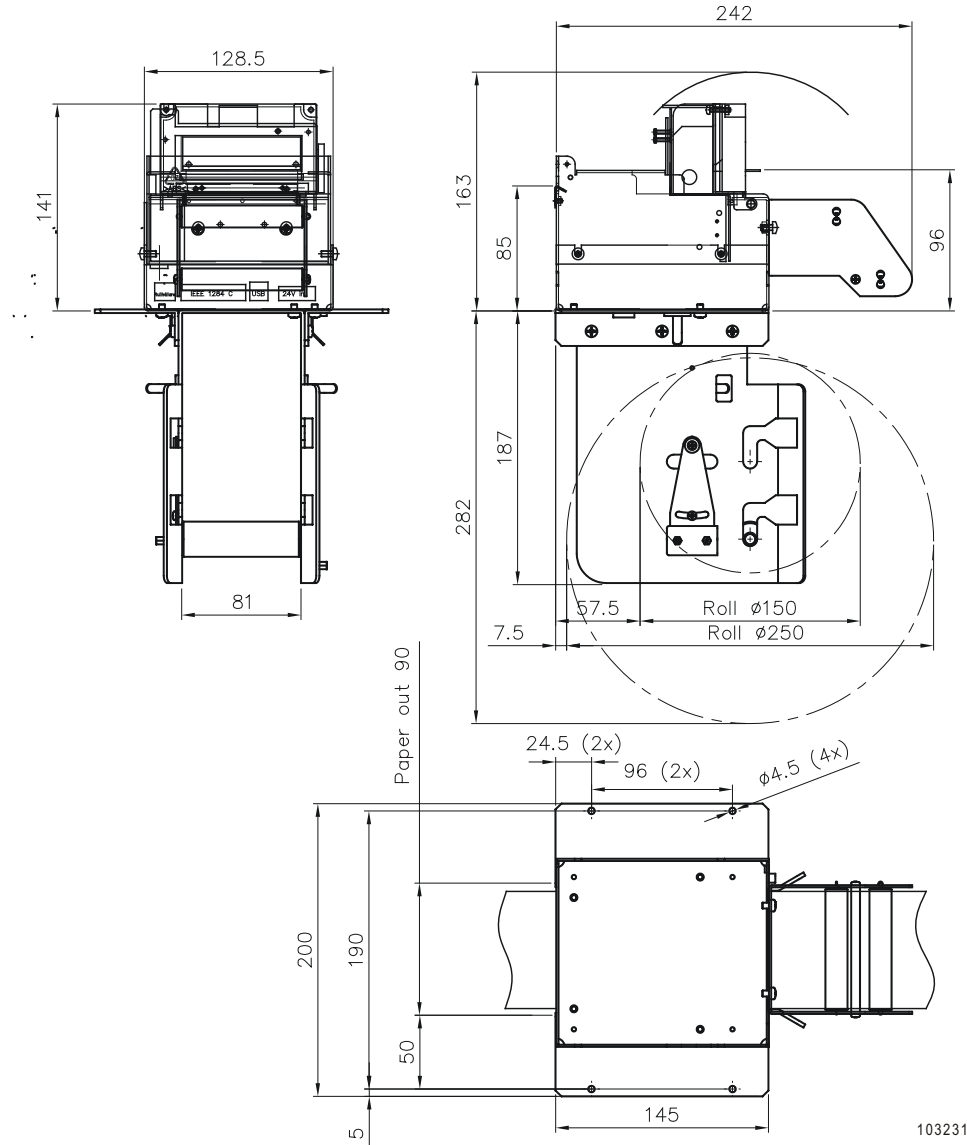
Print Width	80 mm	112 mm
Paper roll holder for up to 150 mm roll diameter with paper-near-end sensor.	01123-080	01123-112

Figure 28 • Roll Holder for Paper Rolls up to 150 mm



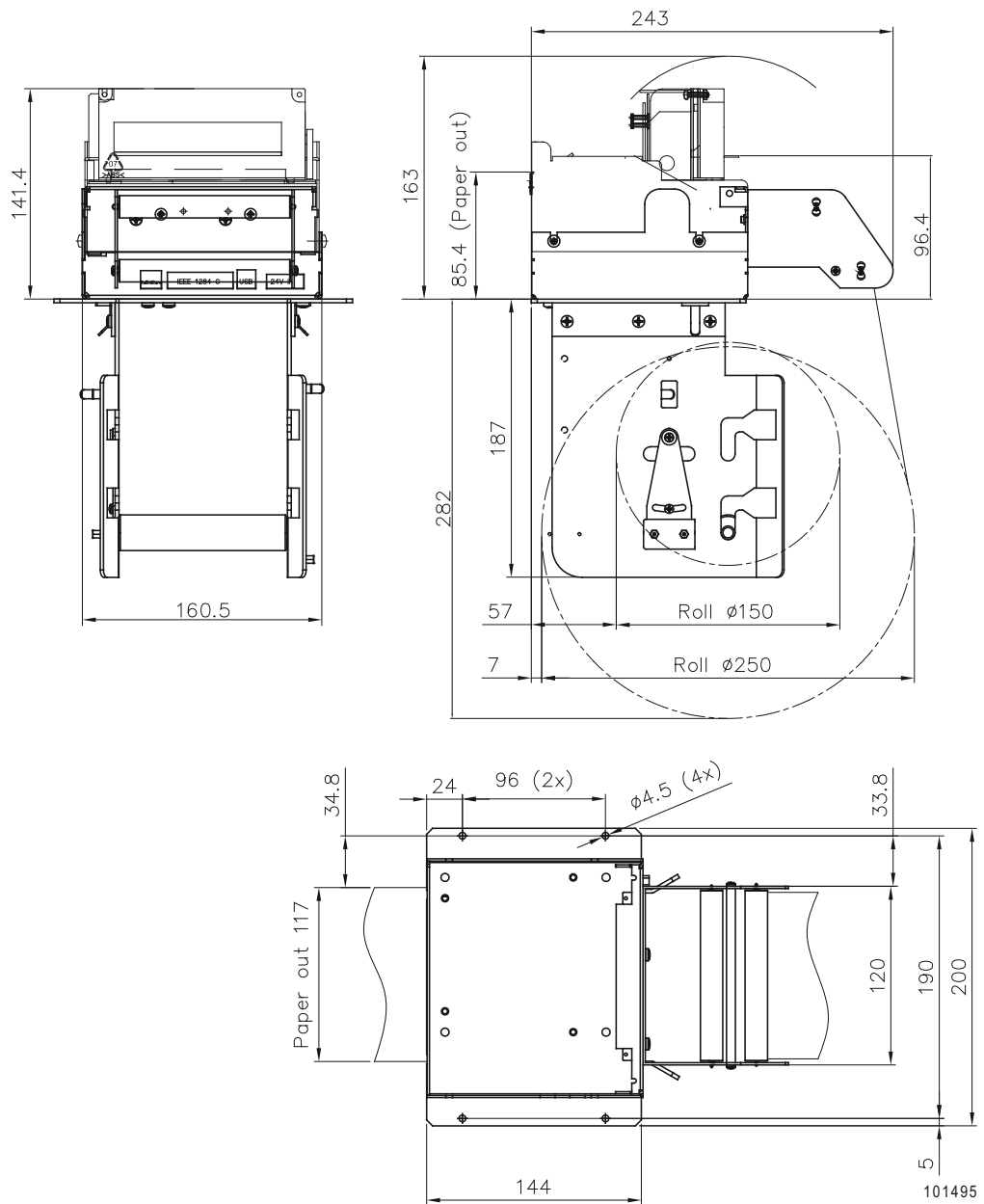
Print Width	80 mm	112 mm
Paper roll holder for up to 250-mm roll mm roll placed below printer. With paper-near-end and weekend sensors.	01754-080	01754-112

**Figure 29 • Roll Holder 01754-080 for Paper Placed Under TTP 70x0/080.**



**Note** • The roll can be fitted on two different levels, one for 150-mm roll, and one for 250-mm roll. This way, minimal space is required under the printer.

Figure 30 • Roll Holder 01754-112 for Paper Placed Under TTP 70x0/112.



**Note** • The roll can be fitted on two different levels, one for 150-mm roll, and one for 250-mm roll. This way, minimal space is required under the printer.





## 中国 RoHS 材料声明 (China RoHS Material Declaration)

部件名称	有毒 / 有害物质或元素					
	铅 (PB)	汞 (Hg)	镉 (CD)	六价铬 (CR6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电子组件 (Electronics)	X	O	O	O	O	O
驾驶火车 (Drive Train)	X	O	O	O	O	O
紧固件 (Fasteners)	X	O	O	O	O	O
打印头 (Print Heads)	X	O	O	O	O	O

X 表示该部件的某一均质材料中的有毒有害物质的含量超出 SJ/Txxx-2006 标准规定的限量要求。

(Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)

O 表示不含有此类物质或此类物质的含量在上述标准规定的限量要求以下。

(Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)



**Notes •** \_\_\_\_\_

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